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THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1907-1908.

OCTOBER 3. 1889.

RALEIGH:
E. M. UZZELL & CO., STATE PRINTERS AND BINDERS.
1908.

CALENDAR.

1908.

JANUARY.

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FEBRUARY.

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1909.

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MARCH.

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JUNE.

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COLLEGE CALENDAR.

1908.

Thursday,	July	9,	Entrance examination at each county courthouse, 10 A. M.
Wednesday,	September	2,	Entrance examination at the College, 9 A. M.
Thursday,	September	3,	First Term begins; Registration Day.
Thursday,	November	26,	Thanksgiving Day.
Tuesday,	December	22,	First Term ends.

1909.

Tuesday,	January	5,	Second Term begins; Registration Day.
Saturday,	March	13,	Second Term ends.
Monday,	March	15,	Third Term begins; Registration Day.
Sunday,	May	23,	Baccalaureate Sermon.
Monday,	May	24,	Alumni Day.
Tuesday,	May	25,	Annual Oration.
Wednesday,	May	26,	Commencement Day.

BOARD OF TRUSTEES.

Name.	*Post-office.*	*Term Expires.*
R. H. Ricks	Rocky Mount	May 1, 1909.
W. D. Turner	Statesville	May 1, 1909.
O. Max Gardner	Shelby	May 1, 1909.
Locke Craig	Asheville	May 1, 1909.
C. W. Gold	Raleigh	May 1, 1911.
E. M. Koonce	Jacksonville	May 1, 1911.
T. W. Blount	Roper	May 1, 1911.
D. A. Tompkins	Charlotte	May 1, 1911.
J. T. Ellington	Smithfield	May 1, 1913.
W. E. Daniel	Weldon	May 1, 1913.
W. H. Ragan	High Point	May 1, 1913.
W. B. Cooper	Wilmington	May 1, 1913.
M. B. Stickley	Concord	May 1, 1915.
T. T. Ballenger	Tryon	May 1, 1915.
N. B. Broughton	Raleigh	May 1, 1915.
O. L. Clark	Clarkton	May 1, 1915.

FACULTY.

GEORGE TAYLOE WINSTON, A.M., LL.D., President, and Professor of Political Economy.

DANIEL HARVEY HILL, A.M., Lit.D., Professor of English, and Vice-President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.

CHARLES WALTER THOMAS, M.E., Professor of Mechanical Engineering.

ROBERT E. LEE YATES, A.M., Professor of Mathematics.

THOMAS NELSON, Professor of Textile Industry.

CHARLES M. CONNER, B.S.A., B.S., Professor of Agriculture.

JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.

WILLIAM JAMES MOORE, M.E., Professor of Electrical Engineering and Physics.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Associate Professor of Veterinary Science and Physiology.

JOHN MICHELS, B.S.A., M.S., Associate Professor of Dairying and Animal Husbandry.

FRANK C. REIMER, M.S., Assistant Professor of Horticulture.

BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

ROBERT SETH CURTIS, B.S.A., Assistant Professor of Animal Husbandry.

CHARLES BENJAMIN PARK, Instructor in Machine Shop and Assistant in Power Plant.

WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Instructor in Chemistry.

CARROLL LAMB MANN, B.S., C.E., Instructor in Civil Engineering.

THOMAS SIMEON LANG, B.S., C.E., Instructor in Civil Engineering.

GEORGE SUMMEY, Jr., Ph.D., Instructor in English.

WINFRED MORSE ADAMS, B.S., Instructor in Electrical Engineering.

JOHN HOUSTON SHUFORD, B.S., Instructor in Dyeing.

CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.

ALFRED HENRY THIESSEN, B.S., Section Director United States Weather Bureau, Instructor in Meteorology.

JOHN STRAUCHON JEFFREY, Instructor in Poultry Husbandry.

ABRAHAM RUDY, A.M., Pd.D.. Instructor in Modern Languages.

RALPH INGRAM SMITH, B.S., Instructor in Zoology and Entomology.

WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.

JOHN ALSEY PARK, B.E.. Instructor in Mathematics.

MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.

LILLIAN LEE VAUGHAN, B.E., Instructor in Drawing and Mechanics.

CARL PHILIP BONN, B.A., Instructor in English.

CLARENCE WILSON HEWLETT, B.S., Instructor in Physics.

VANCE SYKES, B.E., Instructor in Mathematics and Civil Engineering.

WELDON THOMPSON ELLIS, B.E., Instructor in Machine Design and Steam Laboratory.

LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D., Instructor in Chemistry.

HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.

JAMES CLARENCE TEMPLE, B.Agr., Instructor in Bacteriology.

ARTHUR JOHN WILSON, B.S., Instructor in Chemistry.

FRED. BARNET WHEELER, Instructor in Forge.

THOMAS DOTTERER EASON, B.S., Laboratory Assistant in Botany.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar.

ARTHUR FINN BOWEN, Bursar.

BENJAMIN SMITH SKINNER, Farm Superintendent.

JAMES OLIVER LOFTIN, Steward.

Miss ELSIE LANIER STOCKARD, Librarian.

Mrs. DAISY LEWIS, Matron.

Miss KATHARINE FORT, Stenographer.

HENRY McKEE TUCKER, M.D., Physician.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION.

GEORGE TAYLOE WINSTON, A.M., LL.D., President.
CHARLES BURGESS WILLIAMS, M.S., Director and Agronomist.
WILLIAM ALPHONSO WITHERS, A.M., Chemist.
FRANK LINCOLN STEVENS, Ph.D., Vegetable Pathologist.
CHARLES M. CONNER, B.S.A., B.S., Agronomist.
JOHN STRAUCHON JEFFREY, Poultryman.
FRANK CHARLES REIMER, M.S., Horticulturist.
ROBERT SETH CURTIS, B.S.A., Animal Husbandman.
JOHN MICHELS, M.S.A., Dairy Husbandman.
RALPH INGRAM SMITH, B.S., Entomologist.
WILLIAM KERR, B.Agr., Assistant in Field Experiments.
WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Assistant Chemist.
JOHN GALENTINE HALL, A.M., Assistant in Vegetable Pathology.
WILLIAM CARLYLE ETHERIDGE, B.Agr., Assistant in Farm Crops.
JAMES CLARENCE TEMPLE, B.Agr., Assistant Chemist and Assistant Bacteriologist.
ARTHUR FINN BOWEN, Bursar.
MISS MARY ELIZABETH DEW, Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

FIRST LIEUTENANT JOHN S. E. YOUNG, U. S. Army.

Cadet Major.

R. R. EAGLE.

Battalion Staff.

J. L. VON GLAHN, Captain and Adjutant.
S. M. GIBBS, Captain and Quartermaster.

Non-Commissioned Staff.

H. N. SUMNER, Sergeant-Major.
W. F. MORRIS, Color Sergeant.

Band.

J. F. ZIGLAR, Captain.
R. R. FAISON, Drum-Major.
T. F. HAYWOOD, First Sergeant.
J. E. TOOMER, Sergeant.
I. N. TULL, Corporal.
J. S. BRAY, Corporal.

Company A.

D. LINDSAY, Captain.
T. M. POYNER, First Lieutenant.
W. B. BURGESS, Second Lieutenant.
G. HARRISON, First Sergeant.
W. M. MILNER, Sergeant.
J. B. CRAVEN, Sergeant.
A. H. GREEN, Sergeant.
J. S. WHITEHURST, Sergeant.
J. C. ALBRIGHT, Corporal.
C. G. ARMFIELD, Corporal.
W. P. HARDEE, Corporal.
C. W. HINSHAW, Corporal.
W. L. MANNING, Corporal.
H. P. MOSELEY, Corporal.
M. S. MAYES, Corporal.

Company B.

A. G. BOYNTON, Captain.
H. A. POWELL, First Lieutenant.
L. L. PITTMAN, Second Lieutenant.
J. W. HARRELSON, First Sergeant.
T. M. CLARK, Sergeant.
J. M. PARKER, Sergeant.
H. S. STEELE, Sergeant.
G. G. SIMPSON, Sergeant.
D. C. YOUNG, Corporal.
J. F. ROBINSON, Corporal.
T. D. HARRIS, Corporal.
T. B. SUMMERLIN, Corporal.
E. E. BUCK, Corporal.

Company C.

D. Y. HAGAN, Captain.
F. H. BROWN, First Lieutenant.
J. C. WILLIAMS, Second Lieutenant.
C. P. GRAY, First Sergeant.
J. G. PASCHAL, Sergeant.
S. F. STEPHENS, Sergeant.
W. A. HORNADAY, Sergeant.
J. E. LATHAM, Sergeant.

W. N. SLOAN, Sergeant.
R. L. HOLDER, Corporal.
L. L. HOOD, Corporal.
E. H. LEE, Jr., Corporal.
F. N. McDOWELL, Corporal.
L. P. McLENDON, Corporal.
J. L. SPRINGS, Corporal.
R. T. BOYLAN, Corporal.

Company D.

E. E. SMITH, Captain.
M. L. EARGLE, First Lieutenant.
P. L. GAINEY, Second Lieutenant.
R. A. SHOPE, First Sergeant.
B. F. MONTAGUE, Sergeant.
F. A. DUKE, Sergeant.
S. M. MALLISON, Sergeant.
M. H. TERRELL, Sergeant.
L. D. MOODY, Corporal.
J. B. PARKS, Corporal.
H. C. CLAY, Corporal.
S. H. McNEELY, Corporal.
V. P. BYRUM, Corporal.

Company E.

C. T. MARSH, Captain.
B. T. FERGUSON, First Lieutenant.
H. W. KUEFFNER, Second Lieutenant.
J. M. PRICE, First Sergeant.
W. S. DEAN, Sergeant.
F. L. FOARD, Sergeant.
F. J. JONES, Sergeant.
J. R. SUGG, Corporal.
W. R. PHILLIPS, Corporal.
J. W. IVEY, Corporal.
R. L. MORGAN, Corporal.
C. R. JORDAN, Corporal.
J. M. COUNCIL, Corporal.

Note.—On October 16, 1907, the Battalion held a competitive drill on the Fair Grounds track, during Fair Week. Company A was selected as the best drilled organization and awarded the College pennant.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890, and the "Nelson Act" of 1907.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from twelve deep wells. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and eighty-five acres of land and sixteen buildings, and its teaching force consists of forty-two specialists. Its laboratories, drawing-rooms, and work-shops are well equipped. Its library contains five thousand and twenty-four volumes, and its reading-room is well supplied with literary and technical journals and newspapers.

BUILDINGS.

The Main Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation-rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall.—In honor of the late R. Stanhope Pullen, the greatest benefactor of the College, the large new building recently finished has been called Pullen Hall. The basement of this building is used as a dining-room and seats five hundred students. The first story is used for library, reading-room, and lecture-rooms. The second story serves as the College auditorium. This room is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is two hundred and four by seventy-four feet. The lower or basement floor contains the class-rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making, stock judging, farm butchering, and cold-storage accommodations for the products.

The second floor contains the offices of the department, class-rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery.

On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class-rooms and large, well-lighted laboratories.

The building affords the best accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated with open fire-places. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

Foundry.—The old boiler house has been fitted up for foundry purposes. It contains a Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting: benches and hand tools for moulding in the course of exercises, as well as for any repair work for the College.

The Barn is a frame building of modern design and carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

The New Power Plant furnishes heat, light, and power for all the buildings. The boiler plant consists of two 75-horse-power Babcock and Wilcox Company and two 100-horse-power Atlas Water-Tube Boilers, with a working steam pressure of 150 pounds. The Engine Plant consists of a 100-horse-power Skinner Engine and Crocker-Wheeler Generator attached; a 100 K. W. De Laval Turbine Generator set with self-exciter; a 10 K. W. steam-driven Exciter: Set. Steam, and Vacuum Pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren Webster system.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the new Agricultural Building and the laboratories are in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists. electricians. miners. metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers. truckers, and dairymen. by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering. Mining Engineering. Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English. Mathematics, History, Political Economy. Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week or month.

Students cannot properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette-smoking, drinking, gambling, card-playing, visiting pool-rooms, loafing on the streets, and such like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; his failures to perform duty and his infractions of the rules. When this record shows that the young man is not in College for the purpose of getting an education, and is not using his opportunities properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed.

When absent from any duty a student should immediately file with the Commandant, Registrar, or Instructor concerned a statement of the reason for his absence. When no statement is filed it is presumed that every absence from duty is intentional and without excuse. The rules of the College are intended solely to promote manliness; to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the students in the Freshman Class who earn the largest and the next largest amounts of money by labor on the College farm.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

Mr. Frank E. Lowenstein, of Atlanta, Ga., a former student of the College, has donated a medal valued at $25 to be awarded to the member of the Sophomore Class making the best grade in Chemistry.

To the Junior Mechanical Student who has made the most progress in Mechanical Drawing the Mechanical Department gives a set of high-grade drawing instruments.

DISCIPLINE.

The discipline is intended to secure studious habits, with punctuality, system, and order in the performance of all duties. Every effort is made to develop strong, intelligent, high-toned men: and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform school, and it will not retain young men who are vicious, idle, or incompetent.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization of the students, and is entirely under student management. A general secretary is employed by the association and devotes his entire time to the work. The members of the Faculty are interested in the work and give assistance, both financially and otherwise. Any student who is a member of an evangelical church may become an active member. Any student of good moral character or who desires to improve his moral life may become an associate member.

Two regular meetings of the association are held each week, on Sunday and Wednesday evenings, immediately after supper. These meetings are for the training of men to be leaders in religious work after leaving College.

The greatest work of the association is its Bible Study department. About one hundred men are enrolled in these classes. Six or ten men meet in each class and study together. The leaders of these classes are trained by members of the Faculty, and the entire work is under the supervision of the Bible Study Committee and the General Secretary. Every student, whether a member of the association or not, should take advantage of this opportunity and join one of these groups.

The following courses are offered:

Course I.—"Study in Old Testament Characters." A new course, dealing with the great men of the Old Testament, and serving as an introduction to the other courses.

Course II.—"Studies in the Life of Christ." A course intended to give the student an intelligent and sympathetic view of the life and character of Jesus Christ.

Course III.—"Studies in the Acts and Epistles." This course introduces men to the life and work of the early Christian Church, with especial emphasis on the life of Paul.

Course IV.—"The Teachings of Jesus and His Apostles." A scientific and systematic presentation of Christ's own view of His own life and its relation to men.

In addition to the above courses on Bible Study the following courses on missions are offered.

1. The New Era in the Philippines.
2. Effective Workers in Needy Fields.
3. The Call of the Home Land.
4. China and Her Problems.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practice in base-ball, foot-ball, track athletics, etc.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about five thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about seven thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific, and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every two weeks for the discussion of mechanical subjects.

The Berzelius Chemical Society meets weekly for the discussion of chemical subjects and for review of the current chemical literature, with which the College is well supplied.

The Merriman Society of Civil Engineering meets fortnightly for the purpose of reading and discussing papers of interest to civil engineers.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Glee Club is composed of about twenty young men, embracing the best musical talent of the College. It aims to give one concert each year, and afterwards to sing at various College entertainments and functions during the year.

The Alumni Association meets each year on Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This Association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the examination for entrance to the Freshman Class.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each court-house in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1908 is July 9th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Wednesday preceding the opening day. The examinations begin with English at 9 A. M., in Room 21, Main Building, followed by Mathematics at 11, and History at 2, in the same room. The date for 1908 is September 2d.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.
2. School teachers holding teachers' certificates.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Wednesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00.

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform aud cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies is a matter largely to be determined by the parent.

The amount of such allowance should be kept within reasonable bounds. From $50.00 to $100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship. amount to from $275.00 to $325.00 for the entire session; or $230.00 to $280.00, if he has a scholarship.

The largest payment is made in September. A student on entering college should bring about $80.00 to meet his various payments for the first month, or $57.50, if he has a scholarship.

Students withdrawing from college within two weeks from date of entrance will be refunded all money paid by them to the College Bursar, except charges for board during the time here. Students withdrawing later than two weeks from date of entrance will be refunded no money except for board.

Board is $10.00 per month and is payable on the first day of each month from September to May inclusive; board for less time than one month is charged for at the rate of fifty cents a day or $3.00 per week.

The College Bursar is forbidden by the Trustees to give credit, and there is no deviation from this rule.

A more detailed statement of college fees is as follows:

Tuition	$ 45.00
Room rent, fuel and lights	30.00
Library, lecture, and physical culture	4.00
Incidental	5.00
Medical attention and medicine	6.00
Registration	2.00
Board	90.00
Shop and Drawing (material and use of tools) or Botany	2.00
Uniform and cap	14.30
Books and drawing instruments (estimate)	15.00
Laundry (estimated cost)	10.00

Drawing instruments are not required in the Freshman Class nor in the first-year Mechanic Arts course until the beginning of the second term. These instruments are furnished by the College at cost to all students requiring them. New students are advised not to purchase instruments before consulting the drawing instructors.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillow-cases, one pillow and two bed-spreads for single bed.

In addition to the fees enumerated above, students are required to pay fees as follows: A fee of $1 from students taking work in biological (except bacteriological), physical, or electrical laboratory, for material furnished. The deposits for the Chemistry Department are as follows: Inorganic laboratory, $3; analytical laboratory, $6; organic laboratory, $4; determinative mineralogy and assaying, $3. A deposit of $3 from Juniors and $4 from Seniors taking dyeing or bacteriology, to cover cost of breakages. A deposit of $5 from textile students, to cover cost of designing, supplies, tools, etc. Any unused portion of deposits to chemical, bacteriological or dyeing laboratories or to the Textile Department will be returned at the end of the year. If the deposit made is not sufficient to cover breakages and cost of material furnished, the students are required to make good the deficiency.

UNIFORM.

The College uniform must be worn while on military duty by all students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home, or purchased from the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be loaned to needy students of talent and character. The loans are made at six per cent., and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, Alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $1,860.88.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, pillows, bed-spreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College physician. There is an abundant supply of pure water from twelve deep wells. Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 1:30 o'clock P. M., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

COURSES OF INSTRUCTION.

The College offers the following Courses of Instruction:

I. Four-year Courses:

1st. Agriculture (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. Engineering (including Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, and Industrial Chemistry).

3d. Textile Industry or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Agriculture is conferred upon a graduate in the four-year course in Agriculture. The degree of Bachelor of Science is conferred upon a graduate of the four-year course in Chemistry or Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. Short Courses of one year in Agriculture, and of two years in Textile Industry, in the Mechanic Arts (including Carpentry, Wood-turning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending, and in Applied Electricity).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. Winter Courses in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting seven weeks. A one week's course in Agriculture, beginning with the opening of the Winter Term.

IV. Normal Courses for the training of teachers along industrial lines.

V. Graduate Courses, extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

AGRICULTURAL COURSES.

I. The Four-year Course in Agriculture.
Ia. The One-year Course in Agriculture.
Ib. The Seven Weeks' Course in Agriculture and Dairying.
Ic. The One Week's Course.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

The four-year course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of English Literature and of Political Economy as training studies, and reasonable attention to these studies is required.

The one-year course in Agriculture is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course.

The seven weeks' winter course in Agriculture is established to meet the needs of those who can spend only the winter at the College.

The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention.

The seven weeks' dairy course is a course in pratical butter-making in accordance with the most approved methods of the modern creamery.

The one week's course is described on page 32.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are almost constantly assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Department of Agriculture is fitting up laboratories for investigation in Soil Physics and in the mechanical analysis of soils. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices upon yield and upon fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

I. Four-year Course in Agriculture, leading to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Breeds of Live Stock, 10†	2	..	..
Dairying, 22	..	..	5
Fruit Culture, 42	5	..	..
Vegetable Gardening, 43	..	5	..
Botany, Elementary, 55	3	3	3
Animal Physiology, 33	2	4	4
Algebra, 84	5	2	..
Geometry, 85	..	3	5
English, 87	3	3	3
Military Drill, 99	3	2	2

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*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Crops, 3	..	2	2
Stock-judging, 11	2	..	..
Animal-breeding, 12		3	..
Herd Books, 13	..	1	..
Stock-feeding, 14	..	..	4
Poultry Husbandry, 29	..	3	3
Plant Diseases, 57	3	..	..
Systematic Botany, 56			3
Zoology, 64	4		
Economic Entomology, 65		3	
Inorganic Chemistry, 70	3	3	3
Inorganic Chemistry (laboratory), 71	2	2	2
Physics, 78	2	2	2
English, 88 and 90	3	3	3
Military Drill, 99	3	2	2

Junior Year.

Farm Equipment, 1	5	..	2
Soils, 2	..	3	..
Veterinary Anatomy, 34	4	..	..
Veterinary Medicine, 35	..	4	..
Veterinary Practice, 36	..	..	2
Landscape Gardening, 44	..	..	3
Bacteriology, 59	2	2	2
Agricultural Chemistry, 75	2	2	2
Drawing, 80	2	..	..
Wood-work, 82	..	2	2
Forge-work, 83	..	..	2
English and History, 91 and 95	2	2	2
Political Economy, 97	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	2	2
Modern Languages (elective), 92, 93, or 94	3	3	3

Senior Year.

SUBJECTS	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elect six periods of the following:			
English, 91 and 89	2	2	2
Business Law, 96	1	1	1
Modern Languages, 92, 93, or 94	3	3	3
Military Drill, 99	3	2	2
Elect thirteen periods of the following:			
Farm Management, 6	..	2	2
Special Crops, 4	5	3	..
Soil Physics, 5	..	..	3
Meteorology, 79	..	2	..
Advanced Live-stock Judging, 15	2	..	..
Live-stock Management (beef and dairy cattle), 16	..	2	..
Live-stock Management (horses, sheep and swine), 17	..	..	2
Dairy Bacteriology, 23	3	..	..
Cheese-making, 24	..	3	..
Experimental Dairying, 25	..	..	3
Poultry Husbandry, 30	..	..	3
Veterinary Medicine, 37	3	3	3
Advanced Pomology, 45	3	..	..
Forestry, 46	3	..	..
Floriculture, 47	..	3	..
Plant-breeding, 48	..	3	..
Horticultural Research, 49	..	..	6
Plant Diseases (advanced), 58	2	2	2
Bacteriology (advanced), 60	2	2	2
Systematic Entomology, 66	2	2	..
Geology, 69	2	2	2
Industrial Chemistry, 76	3	3	3
Organic Chemistry, 72	3	3	3
Analytical Chemistry (laboratory), 73 and 74	7	7	7
Advanced Political Economy, 98	2	2	2

One-year Course in Agriculture.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture (Elementary), 7	5	5	5
Animal Husbandry, 18	3	3	3
Dairying, 26	5	.	..
Diseases of Live-stock, 38	..	5	
Poultry Husbandry, 29	..	3	3
Horticulture, 50	3	3	3
Diseases of Plants, 57	..	..	2
Botany, 55	3	.	.
Entomology, 68	..	..	3

SEVEN WEEKS' COURSE IN AGRICULTURE.

BEGINS JANUARY 11, 1909.

The Agricultural and Mechanical College offers, besides the four-year course and one-year course in Agriculture, a **seven weeks' course** and a **one week's course**, which are held during the winter months, when the farmers are not busy.

OBJECT.

These courses are designed to meet the needs of those who desire a knowledge of the **practical side of farming**, dairying, and poultry-raising, but who have not time to take the regular course in College. Our experience in the institute work of this State leads us to believe that the farmers are demanding more definite knowledge of their business. Since this can be acquired more easily and at less expense at an Agricultural College than by long experience on a farm, this course is offered.

Young men who have a desire to become farm managers can partially fit themselves for such work by taking this course. The College is called upon frequently to supply farm managers, which it is unable to do because the supply is not equal to the demand. There is a chance for any bright young man who has not money enough to equip a farm of his own to better his condition by fitting himself to accept a position as farm manager.

The demand for well-trained dairymen has also far exceeded the supply, and we have several vacancies now which we are unable to fill. The most imperative demand at present is not the filling of these places, but to find men who will receive proper training, return to the farm, and there engage in putting a stop to the importation of all kinds of dairy and farm products from other States.

Instruction in this course is given in such a manner that the students learn by actual contact and experience. Practical exercises in identifying varieties of farm crops, fruits, judging farm animals, butter-making, propagation of plants, and making and applying spraying mixtures are the means employed in illustrating and fixing in the minds of the students the instruction given in the class-room.

EQUIPMENT.

A new building devoted entirely to Agriculture has been completed. This building furnishes laboratories and class-rooms for all work in Agriculture. Equipment is being added constantly and the facilities for instruction will be much better this year than heretofore.

EXPENSES.

For the Seven Weeks' Course no tuition will be charged. There will be a small medical fee of $1.50. Board may be had in the mess-hall at $2.50 per week. Students who expect to room in dormitories should come provided with covers, sheets, pillow-cases, and towels.

Students will be required to wear white suits in the dairy laboratory. These suits can be had at $1 each.

Books, papers, etc., need not cost over two or three dollars.

The total expense of the course need not exceed $25 over and above railroad fare.

For the One Week's Course there will be no fees. The only expense will be that of board and lodging.

ADMISSION.

No examination is required for entrance to the Seven Weeks' Course. Any person over eighteen years of age may enter and enjoy the full privileges of the instruction. Since the greater part of the instruction is given in the form of lectures and laboratory work, the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects. Meetings of the students will be held from time to time for their mutual improvement.

The lecture and laboratory work begins on Monday, January 11th, and those who expect to take the course should come on Saturday before, so that they can have their board and room arranged for and be ready for work Monday morning.

OUTLINE OF COURSES.

The one week's course will be given preceding the seven weeks' course. Those who wish to go into the subjects more fully may do so in the seven weeks following.

ONE WEEK'S COURSE.

This course will be given from **January 4th to January 9th**, inclusive.

During this course only three subjects will be treated, namely:

Corn, Cotton, and Stock-raising.

In studying corn and cotton much time will be given to *seed selection. Corn judging* will be a feature of the work with corn. Attention will be given to the best methods of preparing the seed-bed, use of fertilizers and cultivation of the crop.

Lectures on stock-raising and practical work in judging cattle, horses, sheep, and swine will be given.

In this course pupils get practical instruction which they put into use after going home, and thereby increase the profits of their farms.

During the evenings of this week special lectures will be given on other farm subjects.

SEVEN WEEKS' COURSE.

GENERAL AGRICULTURE. *21 periods.*

Professor Conner.

Farm Crops.—Conditions of germination and growth of plants; seed selection; preparation and cultivation; studies of varieties of corn, cotton, and other crops; judging corn and cotton.

Soils.—Study of origin, formation, and distribution of soils, their physical properties as related to tillage and fertility; laboratory practice with different types of soils.

Farm Equipment.—Construction of farm buildings; the silo and its use; farm machinery; principles of draft, etc.

Fertilizers.—Kinds for different crops; home-mixing; time and method of application; value of stable manure and leguminous crops.

The department is well equipped with various makes of farm machinery for laboratory work. A large room in the Agricultural Building is used for this purpose.

AGRICULTURAL BOTANY. *21 periods.*

Professor Stevens.

This course consists of lectures and laboratory work. Such subjects as the following will be considered: Cross-breeding of plants; The flower and its structure; Pollen and its use; Improvement of plants by seed selection; The diseases of plants, how to recognize them and how to prevent them; Bacteria in the home and on the farm, their role as disease-producers in man, domestic animals and plants, their function in the dairy, in the making of butter and cheese, in the soil, in rendering plant-food available, and in leguminous roots as nitrogen-gatherers.

HORTICULTURE. *21 periods.*

Assistant Professor Reimer.

The course in Horticulture includes both lectures and laboratory work. It is made especially applicable to North Carolina conditions. The work includes the following subjects:

Fruit Culture.—This course includes a discussion of the fruit section of the State, and a discussion of the possibilities of fruit-growing in each section. This is followed by lectures on the culture of the leading fruits. These deal with the kind of soil; preparation of soils for fruits; varieties; origination of new varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit garden.

Vegetable Gardening.—This course discusses the great trucking industry in the State, and the possibilities of the industry. This is followed by lectures on the best methods of growing the leading vegetables.

A few lectures are also given on the improvement of home grounds.

Laboratory Work.—This includes practices in plant propagation, as budding, grafting, top-grafting, cutting; pruning of fruit and ornamental trees; fruit-bud studies; planting trees; transplanting, and construction of cold-frames and hot-beds.

FEEDS AND FEEDING AND STOCK-RAISING. *21 periods.*

Assistant Professor Curtis.

Lectures on this study will consist of an elementary study of the digestive systems of the various classes of farm animals, indicative of the kinds of foods adapted to their particular digestive apparatus. This will be followed by the food constituents, the kind, amount and proportions best adapted to the various classes of live-stock. The student will be required to make tables of digestibility, calculate nutritive ratios, and arrange feeding rations for the several classes of stock relative to the work which they are to perform.

An outline will also be given on the feed, care, and management of the most prominent breeds of live-stock.

BREEDS OF LIVE-STOCK AND STOCK JUDGING. *21 periods.*

Assistant Professor Curtis.

Lectures are given on this subject relating to the origin, history, and characteristics of the different breeds of live-stock.

The practical part of the work will be given in the judging-room, where the student is required to score the animals, after which a comparative study will be taken up relative to the merits of each animal in the class.

DAIRY FARMING. *Lectures, 12 periods. Laboratory, 21 periods.*

Associate Professor Michels.

Lectures are given on the nature, composition, and secretion of milk, its uses and values as a food, the production and care of sanitary milk, management of dairy herd, details in the production of high-grade cream and butter, the marketing of dairy products, and their value when sold as milk, cream, butter, and cheese.

The dairy laboratory course given in connection with the farm dairy lecture course consists of twenty-one periods of two hours each and comprises every detail of dairy work, butter-making, retailing milk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products, and standardizing milk and cream.

DAIRY EQUIPMENT.

The dairy laboratories occupy about four thousand square feet of floor space on the ground floor of the new Agricultural Building, besides the locker-rooms, toilet and bath-rooms on same floor, and the dairy lecture-room on first floor, used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes, cream vats, hand and power butter-workers, aerators and coolers, milk-testers, and other articles useful in doing farm dairy work.

DISEASES OF LIVE-STOCK. *21 periods.*

Dr. Roberts.

The lectures on this subject will deal principally with the care and management of live-stock with a view to the prevention of diseases, but the nature, causes, and treatment of the more common diseases and injuries will also be given attention. One period each week will be devoted to a clinic, and a practical demonstration of the tuberculin test upon the dairy herd will be given during the course.

ENTOMOLOGY. *21 periods.*

Mr. Smith.

This is a short course in which the more important noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course.

FARM CHEMISTRY. *21 periods.*

Professor Withers.

Lectures on chemistry of fertilizers and animal feeding will be given.

POULTRY-RAISING. *21 periods.*

Mr. Jeffrey.

The subject of Poultry-raising will be considered from the farm standpoint and will include poultry-house construction, the breeds of fowls most suited to the farm, and their breeding, feeding, and management, egg-production, market poultry, including capons and caponizing, incubation and brooding, both natural and artificial.

Those wanting more poultry work than is provided in the regular course can in the last half of the course have additional work of this kind, taking care of a pen of fowls, running an incubator, raising chickens in a brooder, and keeping all the records necessary in our poultry work.

The poultry department is equipped with twenty-five houses, a good incubator cellar with several different makes of incubators, a brooder house and both indoor and outdoor brooders, a feed-room with steam engine and grist and bone mills. Good specimens of ten varieties of poultry best suited to farm requirements are kept, so that students can get familiar with the requirements of the different breeds.

AGRICULTURE.

Equipment.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and twenty-five acres, with two hundred and fifty acres under cultivation; a large three-story and basement barn fifty by seventy-two feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an eight-horse-power Skinner engine. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The live-stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry-yard is divided into sixteen lots. The buildings consist of incubator cellar, brooder-house, and hen-houses. Several different incubators are used. The poultry-yards contain the following breeds: White Wyandotte, White and Barred Plymouth Rock, Black Minorca, Brown Leghorn, Light Brahmas, and Pekin Ducks.

The class and laboratory work is done in Agricultural Hall.

AGRONOMY.

Subjects of Instruction.

1. **Farm Equipment.**—Lectures and recitations upon selecting, planning, and equipping farms; planning and erecting farm buildings, farm vehicles, and machinery; power, water, and drainage; practical exercises in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Five periods, first term; two periods, third term. For Juniors. Professor CONNER.

2. **Soils.**—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils, determining the relation of soils to heat, moisture, air, fertilizers, and mechanical analysis. Three periods, second term. For Juniors. Professor CONNER.

3. **Farm Crops.**—Lectures and recitations upon the history, production, harvesting, and marketing of farm crops. Practical exercises with growing and dried specimens of farm crops. Two periods, second and third terms. For Sophomores. Professor CONNER.

4. **Special Crops.**—This course is designed for advanced work in farm crops. Corn and cotton are taken up in detail and studied in all their relation to farm economy. Other crops of importance are taken up as time permits. Five periods, first term; three periods, second term. For Seniors. Professor CONNER.

5. **Soil Physics.**—This course is for more advanced work in soils, and consists of laboratory practice and lectures on origin, formation, and classification of soils; soil moisture and methods of conserving it; soil temperature; soil texture; mechanical analysis of soils, etc. The soils of the State will be studied. Free use of soil maps will be made. Three periods, third term. For Seniors. Professor CONNER.

6. **Farm Management.**—Lectures upon history of agriculture; present agricultural methods in various countries, cost and relation; profits of various farm operations and systems. Two periods, second and third terms. For Seniors. Professor CONNER.

7. **Agriculture (Elementary).**—The course in Elementary Agriculture will consist of lectures and recitations from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period

per week will be devoted to practical exercises, taking up the analysis and classification of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Five periods. Required of one-year students. Professor CONNER.

ANIMAL HUSBANDRY.

10. Breeds of Live-stock.—The origin, history, and characteristics of the several breeds of live-stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Two periods, first term. Required of Freshmen. Assistant Professor CURTIS.

11. Stock Judging.—Practical exercises are given in live-stock judging. The student is required, after familiarizing himself with the points of the score-card, to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, first term. Required of Sophomores. Assistant Professor CURTIS.

12. Animal Breeding.—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles or laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Sophomores. Assistant Professor CURTIS.

13. Herd Books.—In the study of herd books the student is taught the essential things which constitute a good pedigree. The breeding of pure-bred live-stock has advanced to such a degree that a record of the ancestry must be kept to preserve the purity and trace the performance of the breed. The foundation of the work will be based on the laws which govern breeding, together with the records issued by the various live-stock associations. The student is required to trace the ancestry of animals in their respective herd books. One period, second term. Required of Sophomores. Assistant Professor CURTIS.

14. Stock Feeding.—The course in stock feeding includes a study of the physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respective uses. The feeding of the various classes of animals will be studied, and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations. Four periods, third term. Required of Sophomores. Assistant Professor CURTIS.

15. Advanced Live-stock Judging.—This course will include advanced work in judging of live-stock. Particular stress will be laid on breed types of the different classes of farm animals. Heretofore only the dairy and beef types of cattle, fat and bacon types of swine, mutton and wool types of sheep have been considered. This advanced work will include judging of the particular breed types, classing under these general types, and will be a valuable attribute in fixing breed characteristics. Two periods, first term. Elective for Seniors. Assistant Professor CURTIS.

16. Live-stock Management, Beef and Dairy Cattle.—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. Two periods, second term. Elective for Seniors. Assistant Professor CURTIS.

17. Live-stock Management, Horses, Sheep, and Swine.—This course includes lectures and recitations on the feed, care, and management of horses, sheep, and swine in relation to the respective uses for which they are grown. Two periods, third term. Elective for Seniors. Assistant Professor CURTIS.

18. Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding, herd books, and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods. Required of one-year students. Assistant Professor CURTIS.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath-rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of

De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk-testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and also the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

22. Dairying.—Text-book and lecture course covering the fundamental principles of modern dairying. Two periods, third term. For Freshmen. Laboratory course consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Five periods, third term. For Freshmen. Associate Professor MICHELS.

23. Dairy Bacteriology.—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Two periods, first term. For Seniors. Laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. Three periods, first term. For Seniors. Associate Professor MICHELS.

24. Cheese-making.—This is a lecture and laboratory course on the manufacture of the leading brands of cheese. Three periods, second term. For Seniors. Associate Professor MICHELS.

25. Experimental Dairying.—Lecture and laboratory practice in making butter and cheese of special commercial importance, and a critical study of dairy literature. Three periods, third term. For Seniors. Associate Professor MICHELS.

26. Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Five periods, first term. For one-year students. Associate Professor MICHELS.

POULTRY HUSBANDRY.

The poultry plant has nineteen breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; White and Brown Leghorn; Buff Dopington, Light Brahma, Black Minorca, and Pekin Ducks.

29. Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, third term. For Sophomores. Three periods, second and third terms. For one-year students. Mr. JEFFREY.

30. Poultry Husbandry.—Theory and practice of judging fowls by comparison and score-card; special poultry keeping for special markets; comparison of different systems of poultry keeping; a discussion of articles by best writers in poultry press. Three periods, third term. For Seniors. Mr. JEFFREY.

VETERINARY SCIENCE.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live-stock. In addition to the work required of all students in the agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the agricultural courses.

33. Animal Physiology.—The first term's work will deal largely with the structure of the body, whose uses are to be considered later. The second and third terms' work will deal with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating principles of physiology. Two periods, first term; four periods, second and third terms. Required of Freshmen. Doctor ROBERTS.

34. Veterinary Anatomy.—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors. Doctor ROBERTS.

35. Veterinary Medicine.—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors. Doctor ROBERTS.

36. Veterinary Practice.—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Two periods, third term. Required of Juniors. Doctor ROBERTS.

37. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection. Three periods. For Seniors. Doctor ROBERTS.

38. Diseases of Live-stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent diseases, and the treatment of some of the most common diseases. Five periods, second term. Required of one-year students. Doctor ROBERTS.

HORTICULTURE.

The Horticultural Department occupies rooms in the Agricultural Building, including class-rooms, laboratory, vegetable and fruit cold-storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

42. Fruit Culture.—A course treating of the location of orchards, soil for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include practices in budding, grafting, making cuttings, and a discussion of the principles underlying such practices. Also a study of varieties of fruits, fruit buds, and exercises in pruning. Five periods, first term. Required of Freshmen. Assistant Professor REIMER.

43. Vegetable Gardening.—This course deals with the selection and preparation of soil for vegetables, construction of hot-beds and cold-frames, fertilizing, handling of seeds, irrigation, transplanting, storing, and culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen. Assistant Professor REIMER.

44. Landscape Gardening.—This course deals with the planning, arrangement, and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees and shrubs, flowers and flower-beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Assistant Professor REIMER.

45. Advanced Pomology.—This is an advanced course in the study of fruits. It deals especially with the classification of fruits, as the botany, description, identification, and judging of fruits. It also treats the subject of harvesting and marketing of fruits, as picking, grading, packing, and shipping. Also selling, fruit unions, and markets. Text-book and lectures. Three periods, first term. Elective for Seniors. Assistant Professor REIMER.

46. Forestry.—This course consists of a study of the fundamentals of forestry. It deals especially with the need, influence, formation, care, and improvement of forests. Also the cutting, use, and handling of forest products. A study is made of the forest trees of greatest importance in America. Three periods, first term. Elective for Seniors. Assistant Professor REIMER.

47. Floriculture.—In this course the important subject of forcing flowers and vegetables is taken up. It deals with the construction, heating, and ventilation of forcing-houses. Also the culture of the leading flowers and vegetables in such houses. Lectures and text-book. Three periods, second term. Elective for Seniors. Assistant Professor REIMER.

48. Plant Breeding.—This course includes a brief review of what has been accomplished in plant breeding and a discussion of the most important problems at the present time. It deals with the principles of plant breeding, as laws of breeding, variation and mutation, heredity, mendelian laws, crossing, selection, origination, and improvement of varieties. The subject is treated from the horticulturist's viewpoint, dealing with fruits, vegetables, and flowers. Lectures, text-book and laboratory work. Three periods, second term. More work can be taken by special arrangement if desired. Elective for Seniors. Assistant Professor REIMER.

49. Horticultural Research.—The last term of the Senior year the student makes a thorough study of modern experimental Horticulture. The leading horticultural investigations of the past and present are studied. A study is also made of all important literature of some horticultural subject. The latter will be chosen with reference to the student's future work. Six periods, third term. Elective for Seniors. Assistant Professor REIMER.

50. General Horticulture.—The course in Horticulture for the short-course students will be just as practical as it is possible to make it. The fall term will be devoted to fruit culture. Instruction will be given in budding, grafting, planting, varieties, preparation of soil, best methods of cultivation, cover crops, fertilizers, manures, pruning, and methods of harvesting and marketing. The instruction will apply especially to North Carolina.

During the winter term the subject of vegetable gardening will be taken up. This includes a discussion of the great trucking industry in North Carolina, possibilities in trucking in the State;

soil for vegetables and how to prepare different soils for vegetables; fertilizers and manures for vegetables; the home fruit and vegetable garden; how to get early and late crops; planting and transplanting; hot-beds and cold-frames; best methods of cultivating these crops; varieties, harvesting, and marketing.

The work during the spring term will be a continuation of the work given during the winter term. A few lectures will also be given on the improvement of home grounds and on forestry. Three periods. Required of one-year students. Assistant Professor Reimer.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture-room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, an incubator-room, and a cold-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fire-proof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

Subjects of Instruction.

55. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field-work and simple independent investigations. Three periods. Required of Freshmen. Three periods, third term. Required of one-year students. Professor STEVENS and Mr. EASON.

56. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor STEVENS.

57. Plant Diseases.—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Two periods, third term. Required of one-year students. Professor STEVENS.

58. Plant Diseases (Advanced).—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor STEVENS.

59. General Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor STEVENS and Mr. TEMPLE.

60. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Two periods. For Seniors. Professor STEVENS and Mr. TEMPLE.

ZOOLOGY.

64. Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-book. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Four periods, first term. Required of Sophomores. Mr. SMITH.

ENTOMOLOGY.

65. Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade and ornamental plants; *f*, of barn, mill, and household. Lectures and demonstrations. Three periods, second term. Required of Sophomores. Mr. SMITH.

66. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life history, and habits. Lecture and laboratory practice. Two periods, first and second terms. For Seniors. Mr. SMITH.

68. Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, third term. Required of one-year students. Mr. SMITH.

GEOLOGY.

69. Geology.—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors.

CHEMISTRY.*

70. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated with experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

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*For further information, see course in Chemistry.

71. **Inorganic Chemistry.**—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

72. **Organic Chemistry.**—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Elective for Seniors. Professor WITHERS.

73. **Analytical Chemistry.**—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Seven periods, first term. Elective for Seniors. Doctor WILLIAMS.

74. **Analytical Chemistry.**—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Seven periods, second and third terms. Elective for Seniors who have taken Course 73. Doctor WILLIAMS.

75. **Agricultural Chemistry.**—Snyder's *Soils and Fertilizers,* and Jordan's *Feeding of Animals.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

76. **Industrial Chemistry.**—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries, particularly those whose raw materials are supplied by agriculture or whose products are utilized in agriculture. Three periods. Elective for Seniors. Professor WITHERS.

PHYSICS.*

78. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. Hewlett.

METEOROLOGY.

79. Meteorology and Climatology.—This course consists of twenty-six or more lectures and deals with the fundamental principles of the sciences. Instruction is given in the practical as well as the theoretical branches of the subjects. There will be exercises in map-making and forecasting the weather. The class will visit the local office of the United States Weather Bureau at Raleigh, N. C., and considerable time will be devoted to the study of weather instruments, map-making and recording of data. Special emphasis is given the subjects in their relation to agriculture. Some lectures are illustrated with lantern slides. Two periods, second term. For Seniors. Mr. Thiessen.

DRAWING.†

80. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, first term. Required of Juniors. Mr. Vaughan.

SHOP-WORK.†

82. Wood-work.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. Two periods, second and third terms. Required of Juniors. Mr. Clay.

83. Forge-work.—Exercises in forging and welding; making exercises of iron; care of forge tools and fires. Two periods, third term. For Juniors. Mr. Wheeler.

MATHEMATICS.

84. Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Required of Freshmen. Mr. RICHARDSON and Mr. J. A. PARK.

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*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shop-work, drawing, and other Mechanical Engineering subjects, see course in Mechanical Engineering.

85. Geometry.—Wentworth's *Plane and Solid Geometry. Plane Geometry.* Three periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

87. Introductory Composition and Rhetoric.—This course in the fundamentals of rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. BONN.

88. Rhetoric, Criticism, Essays.—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Three periods, first term. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

89. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of exercises. Required of Seniors. Two periods, third term. Professor HILL.

90. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

91. English Literature.—The development of English literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two hours, second and third terms. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three or four hours per week, according to the size and convenience of the classes. When four hours are given, the class receives its instruction twice a week, and each time two hours in succession.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German, French, and Spanish.

92. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Doctor RUDY.

93. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor RUDY.

94. Spanish.—Worman's *Modern Languages*, first and second Spanish books; a Spanish grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Doctor RUDY.

HISTORY.

95. English History.—The text is supplemented by lectures on important periods. Two periods, first term. Required of Juniors. Professor HILL.

BUSINESS LAW AND CIVICS.

96. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book, Parsons' *Laws of Business*. One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. President WINSTON.

98. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

99. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first term. Two periods, second and third terms. Required of all classes except Seniors. Seniors are to either take drill or two extra hours in some other subject instead. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

ENGINEERING COURSES.

Four-year Courses in

- II. Civil Engineering.
- III. Mechanical Engineering.
- IV. Electrical Engineering.
- V. Mining Engineering.
- VI. Industrial Chemistry.

Two-year Course in

- IIIa. Mechanic Arts.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135†	2		
Mechanical Drawing, 136		2	
Descriptive Geometry, 137			2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	
Geometry, 264		3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Architecture, 125	2		
Architectural Drawing, 126	2	2	2
Geometry, 265	5		
Advanced Algebra, 266		3	
Trigonometry, 267		2	5
Descriptive Geometry, 101		2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

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*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 103 and 106	2	2	2
Surveying (field-work), 107	2	2	2
Construction, 105	2	..	..
Descriptive Geometry, 101	2	2	2
Graphic Statics, 102	..	2	2
Mechanics, 104	3	3	3
Analytical Geometry, 268	4	4	..
Calculus, 269	..	..	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Mechanics of Materials, 115	3	..	..
Construction, 105	..	2	2
Road-building, 112	2	..	..
Roofs and Bridges, 109	3	..	..
Bridge Design, 110	..	4	4
Municipal Engineering, 111	..	2	2
Surveying (field-work), 108	2	..	..
Hydraulics, 116	..	3	3
Calculus, 269	3	..	..
Railroad Engineering, 106	2	..	..
Reinforced Concrete, 114	..	2	2
Astronomy, 113	..	2	2
Elect six periods from the following:			
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field-work.

Subjects of Instruction.

101. Descriptive Geometry, Stereotomy.—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. Lang.

102. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Professor Riddick and Mr. Mann.

103. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, road-making. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Mr. Lang and Mr. Mann.

104. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil and Mining Engineering. Mr. Lang and Mr. Mann.

105. Construction.—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

106. Railroad Engineering.—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Two periods, first term. Required of Seniors in Civil Engineering. Mr. Lang and Mr. Mann.

107. Surveying.—Field-work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. Mann and Mr. Sykes.

108. Surveying.—Field-work. Triangulation and topography, surveys for sewers, water-works, etc. Two periods, first term. Required of Seniors in Civil Engineering. Mr. MANN and Mr. SYKES.

109. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges.* Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

110. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

111. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

112. Road-building.—Text-book on construction of roads, streets, and pavements. Lectures on practical road-making in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

113. Astronomy.—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

114. Reinforced Concrete.—Turneaure & Maurer's *General Theory of Concrete and Steel Construction.* Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN and Mr. LANG.

115. Mechanics of Materials.—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

116. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics.* Three periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

ARCHITECTURE.

125. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Mr. MANN.

125. Architectural Drawing.—Drawings from a building already constructed. design of a dwelling. detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN.

COURSES IN MECHANICAL ENGINEERING AND MECHANIC ARTS.

The regular four-year course in Mechanical Engineering is intended to fit the student for positions of responsibility in engineering work, and also to furnish him with a basis to carry on more advanced engineering studies. It treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery. boilers. and engines.

The two-year course is offered to students who wish to become machinists, draughtsmen. stationary engineers. or dynamo tenders.

The courses follow closely the methods adopted by the large manufacturing companies, both in drawing-room system and shop methods.

III. The Four-year Course in Mechanical Engineering. leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	..
Geometry, 264	..	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 139	2	2	2
Forge-work, 148	2	..	..
Pattern-making, 149	..	2	2
Geometry, 265	5	..	..
Advanced Algebra, 266	..	3	..
Trigonometry, 267	..	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Boilers, 157	2	..	..
Steam Engines, 158	..	2	..
Valve Gears, 159	..	..	2
Applied Mechanics, 169	3	3	3
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Electrical Engineering, 183	2	2	2
Analytical Geometry, 268	4	4	..
Calculus, 269	..	..	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK		
	1st Term.	2d Term.	3d Term.
Machine Design, 141	2	3	3
Machine-shop Work, 151	3	3	3
Power Plants, 161		.	4
Gas Engines, 162	5	..	..
Refrigeration, 163	.	3	.
Heating and Ventilation, 166	..	1	1
Pumping Machinery, 165	.	1	
Structural Engineering, 167	..	2	2
Mechanics of Materials, 115	3	..	..
Steam Engineering Laboratory, 168	2	2	2
Calculus, 269	3	..	..
Hydraulics, 116	..	3	3
Elect six periods from the following:			
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

IIIa. The Two-year Course in Mechanic Arts.

First Year.

Free-hand Drawing, 135	4	..	..
Mechanical Drawing, 136	..	4	..
Descriptive Geometry, 137	..	..	4
Wood-work, 146	3	3	3
Forge-work, 147	3	3	3
Mechanical Technology, 152	1	1	1
Arithmetic, 261	5	..	..
Algebra, 262	..	5	5
English, 271	3	3	3
Military Drill, 299	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 171	2	2	2
Machine-shop Work, 150	3	3	3
Drawing, 171, or Machine-shop Work, 150	3	3	3
Mechanical Technology, 172	1	1	1
Steam and Steam Machinery, 173	2	2	2
Drawing, 171, or Shop-work, 150*	5	5	1
Algebra, 263, Drawing, 171, or Shop-work, 150*	5	2	..
Geometry, 264, Drawing, 171, or Shop-work, 150*	..	3	5
Military Drill, 299	3	2	2

*Shop-work to be either wood-working or machine-shop.

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop, office, and library. On the second floor are the recitation-room, two drawing-rooms, and a wood-finishing room. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books, the use of which is required.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine, a one-horse-power gasoline engine (all of which were built by students), a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a 4½x6x6 Blake air-pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a water-motor, a

Worthington water-meter, a complete Westinghouse air-brake equipment, a New York air-brake equipment in section, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope beads; a 6-inch sash and blind sticker; a 34-inch band-saw; a jig-saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain-mortiser; a dovetailing machine; a 38-inch grindstone; a wood trimmer; an adjustable miter-box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well-lighted and ventilated, neatly-paved room, thirty by forty feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis and Eagan lathe with 10-foot bed, 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a Brown & Sharp universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe-threading and cutting machine, a Greenwich arbor press and an electric center grinder, a Whiton centering machine, and a Twist drill grinder. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The tool-room is well equipped with the necessary hand and pipe tools.

The power for the shops is furnished by electric motors.

Subjects of Instruction.

135. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine: use of instruments, and tracing. Two periods, first term. Required of Freshmen. Four periods, first term. Required of first-year students in Mechanic Arts. Mr. VAUGHAN.

136. Elementary Mechanical Drawing.—Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen. Four periods, second term. Required of first-year students in Mechanic Arts. Mr. VAUGHAN.

137. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods, third term. Required of Freshmen. Four periods, third term. Required of first-year students in Mechanic Arts. Mr. VAUGHAN.

139. Mechanical Drawing.—Working sketches and drawings of machine parts from the model. Tracing and blue-printing. Elementary machine design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. ELLIS.

140. Machine Design.—Study of the communication of motion by gear wheels, cams, belts, and link-work; automatic feed, parallel and quick return motions. Epicylic trains. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. ELLIS.

141. Machine Design.—Estimating, checking of working drawing, original design. Calculations and working drawings of types of engines, boilers, pumps, condensers, shafting, etc. Two periods, first term. Three periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

Students are required to stamp their drawings with the College stamp, similar to the practice in the drawing-rooms of the large manufacturing companies. Encouragement is given to original design, especially when carried through the shops to a complete working machine.

146. Wood-work.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Two periods. Required of Freshmen. Three periods. Required of first-year students in Mechanic Arts. Mr. CLAY.

147. Forge-work.—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Required of Freshmen. Three periods. Required of first-year students in Mechanic Arts. Mr. WHEELER.

148. Forge-work.—Exercises in working with steel. Tempering. Case-hardening. Two periods, first term. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. WHEELER.

149. Pattern-making.—Exercises in making patterns and moulds of machine parts. Two periods, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CLAY.

150. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Three periods. Required of second-year students in Mechanic Arts. Mr. PARK.

151. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Three periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

152. Mechanical Technology.—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Care of belting and shafting. One period. Required of first-year students in Mechanic Arts. Mr. CLAY.

157. Boilers.—Steam generation; types, care and management; fittings and appliances, corrosion and incrustation; combustion of fuel; boiler power. Two periods, first term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and in Mining Engineering. Professor THOMAS.

158. Steam Engines.—Types—simple and compound, and triple expansion, automatic, Corliss, rotary, turbines. Care and management. Indicators, indicated and brake horse-power. Condensers. Two periods, second term. Required of Juniors in Mechanical Engineering, and of Seniors in Electrical and Mining Engineering. Professor THOMAS.

159. Valve Gears.—Plain slide valve, balance valve, Corliss and other form valve gears, link and radial reversing gears. Shaft governors. Bilgram and Zeuner valve diagrams. Two periods, third term. Required of Juniors in Mechanical Engineering, and of Seniors in Mining Engineering. Professor THOMAS.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Four periods, third term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

162. Gas Engines.—Theory of the gas engine. Various types of gas, gasoline, and oil engines. Brake and indicated horse-power; efficiency. Gas producers. Five periods, first term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Carbon dioxide and compressed-air machines. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Water-works machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor THOMAS.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. One period, second and third terms. Required of Seniors in Mechanical Engineering. Professor THOMAS.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

168. Steam Engineering Laboratory.—Practice in engine running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Two periods: required of Seniors in Mechanical Engineering. One period; required of Seniors in Electrical Engineering. A brief course in Surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines, and machinery by the use of transit and level. Professor THOMAS and Mr. ELLIS and Mr. VAUGHAN.

169. Applied Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. VAUGHAN.

171. Mechanical Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Required of second-year Mechanic Arts students. Mr. VAUGHAN.

172. Mechanical Technology.—Classification and use of hand-tools and machines usually found in the pattern shop, foundry, and machine shop. Materials used and methods of carrying on work in these shops. Practical problems in estimating cost and material required to complete a piece of work; arrangement and sizes of belting, pulleys, and shafting. One period. Required of second-year students in Mechanic Arts. Professor THOMAS.

173. Steam and Steam Machinery.—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Two periods. Required of second-year students in Mechanic Arts. Professor THOMAS.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior year a course in designing the various electrical machines is given.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Free-hand Drawing, 135	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	..
Geometry, 264	..	3	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 265	5	..	..
Advanced Algebra, 266	..	3	..
Trigonometry, 267	..	2	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Forge-work, 148	2	..	..
Pattern-making, 149	..	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 183	5	5	5
Electrical Engineering Laboratory, 186	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Applied Mechanics, 169	3	3	3
Analytical Geometry, 268	4	4	..
Calculus, 269	..	..	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

Electrical Engineering, 184	5	5	5
Electrical Engineering Laboratory, 190	2	2	2
Electrical Design, 191	2	2	2
Boilers, 157	2	..	..
Steam Engines, 158	..	2	..
Steam Engineering (laboratory), 168	1	1	1
Calculus, 269	3	..	..
Hydraulics, 116	..	3	3
Elect six periods from the following:			
Business Law, 295	1	1	1
English Literature, 276 and 274	2	2	2
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures: definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids: heat: sound, and light. Text-book used: Carhart & Chute's *High School Physics.* Four periods. Required of Freshmen in Engineering courses. Mr. HEWLETT.

177. **Elementary Lessons in Electricity and Magnetism.**—Text-book used: *Elementary Electricity and Magnetism,* by D. C. & J. P. Jackson. Two periods. Required of Sophomores. Professor MOORE.

178. **Physical Laboratory.**—Practice in handling units in British and metric systems. Experiments in mechanics, illustrating addition and composition of forces, the lever, the inclined plane, the pendulum, density, and specific gravity, and Boyle's law. Experiments in heat, sound, and light, covering the following subjects: Thermometer calibration, calorimetry, hygrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscope. Text-book used: Cheston-Dean-Timmerman's *Laboratory Course in Physics.* One period. Mr. SPRAGUE.

179. **Physical Laboratory.**—Continuation of Course 178. Elementary experiments in magnetism. The electric circuit. Primary batteries. Measurement of electro-motive force, current, and resistance. Telegraph and telephone circuits. Required of Sophomores in Electrical, Mining, and Mechanical Engineering, and in Chemistry. Mr. HEWLETT.

ELECTRICAL ENGINEERING.

Equipment.

For this course two laboratories are equipped: one known as the instrument laboratory, in which measuring instruments and apparatus are kept, and the other as the dynamo laboratory, containing generators, motors, transformers, switchboards, etc. The instrument laboratory is provided with direct and alternating current voltmeters, ammeters, and wattmeters, Wheatstone bridges, galvanometers, condensers, etc. It is supplied from the central power-house with direct and alternating currents of any voltage, phase, or frequency for use in checking instruments and making measurements. The dynamo laboratory is a small one-story brick building 30 x 50 feet, and is equipped with a 3-phase synchronous motor coupled directly to a line shaft arranged to drive small generators, an 11.5 K. W. 110-volt Westinghouse D. C. generator, 20 K. W. 2-phase 110-volt Lincoln alternator, one 6-light T. H. arc-lighting generator, one 1-horse-power Sprague motor, one 8 K. W. 110-volt Siemens & Halske generator, one 2-horse-power 3-phase 110-volt G. E. induction motor, one 2 K. W. 110-volt LaRoche single-phase alternator, two 2½ K. W. 110-volt 3-phase generators, two 2½ K. W. 125-volt compound wound D. C. generators with series coils for use as series motors or generators, one 2½ K. W. 110-volt A. C. rotary converter, one 30-ampere Hewitt mercury rectifier. The laboratory also contains constant potential and constant current transformers, condensers, circuit-breakers, etc., and a switchboard well equipped with voltmeters, ammeters, frequency indicators, etc.

The central power station is also available for student use, the equipment consisting in a 75 K. W. 600-volt 3-phase Crocker-Wheeler generator coupled to a Skinner engine, two 50 K. W. 300-volt 3-phase Crocker-Wheeler generators coupled to a 150-horse-power De Laval steam turbine, one 9.5 K. W. 125-volt Westinghouse D. C. exciting generator, and switchboard provided with meters, instrument transformers, oil circuit-breakers, wattmeters, synchroscope, etc.

The department possesses a small library of standard books on all branches of Physics and Electrical Engineering.

183. Electrical Engineering.—The magnetic circuit. Electrical measurements. Electro-magnetic induction. Storage batteries. Arc-lighting. Incandescent lighting. Interior wiring. Dynamos and dynamo design. Direct current motors. Management and operation of dynamos and motors. Text-books used: *International Correspondence School Pamphlets* and Crocker-Wheeler's *Management of Electrical Machinery.* Five periods. Required of Juniors in Electrical Engineering. Two periods. Required of Juniors in Mechanical Engineering. Professor Moore.

184. Electrical Engineering.—Practice in calculating circuits containing resistance, inductance, and capacity. Alternators. Design of alternating current apparatus. Power transformation and measurement. Line construction. Switchboards and appliances. Electric power stations. Electric car equipment. Motors and controllers. Line and track. Line calculations. Multiple unit systems. Theory of operation and design of transformers, induction motors, A. C. series motors, and repulsion motors. Text-books used: Hay's *Alternating Currents* and *International Correspondence School Pamphlets.* Five periods. Required of Seniors in Electrical Engineering. Professor MOORE.

186. Electrical Engineering Laboratory.—Practice in varying the ranges of ammeters and voltmeters. Various methods of measuring resistance. Permeability and hysteresis tests. Practice with direct current generators and motors. Characteristic curves. Efficiency tests. Two periods. Required of Juniors in Electrical Engineering. Mr. ADAMS.

190. Electrical Engineering Laboratory.—Senior year. Coupling D. C. generators for parallel, series and three-wire operation. Stray power tests. Kapp's pumping back method. Heat test of a D. C. dynamo. Series and parallel A. C. circuits. Platting vector diagrams. Experiments with A. C. generators, induction and synchronous motors, transformers, etc. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Mr. ADAMS.

191. Electrical Design.—Design of magnets, dynamos, alternators, induction motors, and transformers. Two periods. Required of Seniors in Electrical Engineering.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery, and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2		.
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	.		2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Algebra, 263	5	2	..
Geometry, 264	..	3	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Forge-work, 148	2	..	
Pattern-making, 149	..	2	2
Geometry, 265	5	..	
Advanced Algebra, 266	.	3	
Trigonometry, 267	.	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 105	2	..	..
Graphic Statics, 102	..	2	2
Surveying, 103 and 106	2	2	2
Surveying (field-work), 107	2	2	2
Descriptive Geometry, 101	2	2	2
Mechanics, 104	3	3	3
Analytical Geometry, 268	4	4	..
Calculus, 269		.	4
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2
Modern Languages (elective), 277, 278, or 279	3	3	3

Senior Year.

Mining, 206	..	4	4
Ore Dressing, 207	4	..	..
Geology, 211	2	2	2
Metallurgy, 208	..	2	2
Mineralogy, 212	4	..	..
Assaying, 209	..	2	2
Boilers, 157	2	..	..
Steam Engines, 158	..	2	..
Valve Gears, 159	..	..	2
Hydraulics, 116	..	3	3
Calculus, 269	3	..	..
Elect six periods from the following:			
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2
Modern Languages, 277, 278, or 279	3	3	3

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, stoping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining.

208. Metallurgy.—Introductory: combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining.

GEOLOGY AND MINERALOGY.

211. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors in Mining.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining.

COURSES IN INDUSTRIAL CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in the analytical or the operating departments of the various chemical industries. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in the applied chemical subjects bearing more directly on the course the student has selected. The fundamental principles of engineering, machinery, etc., which are almost indispensable to the successful management of chemical plants, are taught, together with the cultural studies included in the other courses.

Raleigh as a Chemical Center.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

Chemical Equipment.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

Graduates in Chemistry.

The chemical graduates of the College are engaged in the following lines of chemical work: Manufacture of illuminating gas, manufacture of sulphuric acid, manufacture of fertilizers, manufacture of tobacco products, refining and testing of oils, metallurgy of iron, metallurgy of copper, dyeing of cotton goods, in seven agricultural experiment stations, in State departments of agriculture, and in teaching chemistry. These are employed in North Carolina and eleven other States.

VI. The Four-year Course in Industrial Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Free-hand Drawing, 135	2	..	..
Mechanical Drawing, 136	..	2	..
Descriptive Geometry, 137	..	..	2
Wood-work, 146	2	2	2
Forge-work, 147	2	2	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 263	5	2	..
Geometry, 264	..	3	5
English, 272	3	3	3
Military Drill, 299	3	2	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Elementary Botany, 241	3	3	3
Geometry, 265	5	..	..
Advanced Algebra, 266	..	3	..
Trigonometry, 267	..	2	5
English, 273 and 275	3	3	3
Military Drill, 299	3	2	2

Junior Year.

Organic Chemistry, 218	3	3	3
Analytical Chemistry, 220 and 226	7	7	7
Bacteriology, 251	2	2	2
German, 277	3	3	3
English and History, 283 and 276	2	2	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	2	2

Senior Year.

Industrial Chemistry, 233	3	3	3
Analytical Chemistry, 226	7	7	7
Organic Chemistry (laboratory), 228	4	4	4
Bacteriology, 252	2	2	2
Elect six periods from the following:			
English, 276 and 274	2	2	2
Business Law, 295	1	1	1
Military Drill, 299	3	2	2
German, 277	3	3	3

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

217. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

218. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Chemistry. Professor WITHERS.

220. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Seven periods, first term. Required of Juniors in Chemistry. Doctor WILLIAMS.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Chemistry. Seven periods. Required of Seniors in Chemistry. Doctor WILLIAMS.

228. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dye-stuffs is prepared and the properties studied. Four periods. Required of Seniors in Chemistry. Doctor SYME.

233. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Three periods. Required of Seniors in Chemistry. Professor WITHERS.

BOTANY.

241. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading, regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Sophomores in Chemistry. Professor STEVENS and Mr. EASON.

BACTERIOLOGY.

251. General Bacteriology.—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor STEVENS and Mr. TEMPLE.

252. Bacteriology, Advanced.—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS and Mr. TEMPLE.

MATHEMATICS.

While the subject of Mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet, at the same time, it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises and lectures, the scope being quite sufficient for the needs of the institution.

261. Arithmetic.—Milne's *Standard Arithmetic*. Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students in Mechanic Arts. Mr. RICHARDSON and Mr. SYKES.

262. Algebra.—Wells's *New Higher Algebra* up to quadratic equations. Five periods, second and third terms. Required of first-year students in Mechanic Arts. Mr. RICHARDSON and Mr. SYKES.

263. Algebra.—Wells's *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Required of Freshmen and second-year students in Mechanic Arts. Mr. RICHARDSON and Mr. J. A. PARK.

264. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Three periods, second term; five periods, third term. Required of all Freshmen and second-year students in Mechanic Arts. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

265. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

266. Advanced Algebra.—Wells's *New Higher Algebra.* Compound interest and annuities, permutations, combinations, continued fractions, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

267. Trigonometry.—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

268. Analytical Geometry.—Nichols's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Four periods, first and second terms. Required of Juniors in Engineering. Professor YATES.

269. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of undeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Four periods, third term. Required of Juniors. Three periods, first term. Required of Seniors. Professor YATES.

ENGLISH.

271. English Composition.—A drill on the forms of the language, the correct relation of words, the sentence, the paragraph. Daily written exercises. Three periods. Required of first-year students in Mechanic Arts. Doctor SUMMEY and Mr. BONN.

272. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor Hill, Doctor Summey, and Mr. Bonn.

273. Rhetoric, Criticisms, Essays.—The student is taught the essentials of a good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor Hill, Doctor Summey, and Mr. Bonn.

274. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of exercises. Required of Seniors. Two periods, third term. Professor Hill.

275. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor Hill, Doctor Summey, and Mr. Bonn.

276. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of all Seniors. Professor Hill.

MODERN LANGUAGES.

The aim of the department is to enable one (*a*) to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and (*b*) to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three or four hours per week, according to the size and convenience of the classes. When four hours are given, the class receives its instruction twice a week and each time two hours in succession.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German, French and Spanish.

277. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Doctor Rudy.

278. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor Rudy.

279. Spanish.—Worman's *Modern Languages*, first and second Spanish books; a *Spanish Grammar* to be selected; *Fontaine's Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Doctor Rudy.

HISTORY.

283. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of Juniors. Professor Hill.

BUSINESS LAW AND CIVICS.

295. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: Parsons' *Laws of Business*. One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

297. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. President WINSTON.

298. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

299. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours. Required of all classes except Seniors. Elective for Seniors. Commandant and Officers of the Battalion.

300. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty One period. Required of Juniors. Lieutenant YOUNG.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.
VIIIb. Special Ten Weeks' Course in Carding and Spinning.
VIIIc. Special Ten Weeks' Course in Weaving and Designing.

THE TEXTILE DEPARTMENT.

The Textile Department is located in a new building recently erected for its use. The instruction given in this department is in the theory and practice of cotton manufacturing. The building, which is a typical cotton mill, is fully equipped with all the necessary machinery for manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department three courses of instruction are offered, the four-year course leading to the degree of Bachelor of Engineering, the two-year course and the ten-weeks' winter course in carding and spinning, weaving, and designing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to mature students who cannot spend the time required for the four-year course, or who have had considerable practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

Special Ten Weeks' Courses.

Special ten weeks' courses are offered to practical mill men in carding and spinning, weaving and designing. These courses are given during the winter of each year, beginning with the opening of College in January and lasting until the middle of March. They aim to meet a demand from cotton-mill superintendents, overseers, and practical men for special instruction in the subjects named.

The textile instruction given is of a practical nature and covers the entire ground of cotton manufacturing. Its object is to prepare the student for a useful career in this industry. There is a demand from the mills in this and other States for young men technically trained in the manufacture of cotton goods, especially of the finer grades. That the graduates are meeting with success in this industry is shown by the positions held by them. Among these are president, secretary and treasurer, manager, superintendent, designer, overseer of weaving, mill architect, machinery salesman. In fact, the graduates have gone into almost every branch of cotton manufacturing and have met with success. All have received the same training. The point to which each has advanced has depended upon the ability to deal with the general problems of manufacturing.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening-room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding-room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11 x 5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9 x 4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7 x 3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6 x 2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning-room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by The T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen loom; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn & Lincoln, Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2 x 1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton 4 x 1 box gingham loom, one Crompton 4 x 1 box loom with 20-harness dobby, one Crompton single-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4 x 4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One 2 x 1 box loom with 600-hook Jacquard machine, made by Joseph Battles Manufacturing Co., Lawrence, Mass. One 4 x 1 box table-cover loom with 624-hook Halton Jacquard Machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, and alkalies, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dye-stuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

Badische Company, 128 Duane St., New York, samples Indanthrine dyestuffs and color cards.

A. Klipstein & Co., 122 Pearl St., New York, 2 pounds aniline oil, 2 pounds aniline salt.

Farbenfabriken of Elberfield Co., 66 Lafayette St., New York, 5 pounds Malapale soap, large collection of dyestuffs and color cards.

Berlin Aniline Works, New York, samples of dyestuffs and color cards.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks, Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

Heating Plant.

Steam Coils and Blowing Fan, made by B. F. Sturtevant Co., Boston, Mass.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301†	1	1	1
Weaving, 302	2	2	2
Free-hand Drawing, 316	2	..	..
Mechanical Drawing, 317	..	2	..
Descriptive Geometry, 318	..	..	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Algebra, 335	5	2	..
Geometry, 336	..	3	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Military Drill, 359	3	2	2

*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	..	..
Advanced Algebra, 338	..	3	..
Trigonometry, 339	..	2	5
English, 342 and 344	3	3	3
Military Drill, 359	3	2	2

Junior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Warp Preparation (special), 302	..	..	2
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Boilers, 326	2	..	..
Engines, 327	..	2	..
English and History, 347 and 345	2	2	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2
Modern Languages (elective), 348, 349, or 350	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	2	2	2
Cloth Analysis, 304	1	1	1
Dyeing, 306	2	2	2
Machine-shop Work, 324	2	2	2
Elect six periods from the following:			
English, 345 and 343	2	2	2
Business Law, 352	1	1	1
Military Drill, 359	3	2	2
Modern Languages, 348, 349, or 350	3	3	3

VIIIa. The Two-year Course in Textile Industry.

First Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Free-hand Drawing, 316	2	..	..
Mechanical Drawing, 317	..	2	..
Descriptive Geometry, 318	..	..	2
Forge-work, 321	2	2	2
Arithmetic, 333	5	..	..
Algebra, 334	..	5	5
English, 340	3	3	3
Military Drill, 359	3	2	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	5	5	5
Weaving, 302	6	6	6
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Machine-shop, 324	2	2	2
English, 341	3	3	3
Military Drill, 359	3	3	3

Description of Subjects.

301. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of Freshmen, Sophomores, Juniors, and Seniors, and of first and second year students. Assistant Professor Parker.

302. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinder; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors, and of first and second year students. Professor NELSON and Mr. STEED.

303. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honey-comb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piques. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors, and of first and second year students. Professor Nelson, Mr. Shuford, and Mr. Steed.

304. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Draughting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, and Seniors, and of first and second year students. Professor Nelson, Mr. Shuford, and Mr. Steed.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dyestuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	1	1	1
Weaving, 302	2	2	2
Free-hand Drawing, 316	2	..	..
Mechanical Drawing, 317	..	2	..
Descriptive Geometry, 318	..	..	2
Wood-work, 320	2	2	2
Forge-work, 321	2	2	2
Algebra, 335	5	2	..
Geometry, 336	..	3	5
Elementary Physics, 331	2	2	2
English, 341	3	3	3
Military Drill, 359	3	2	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	..	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	..	..
Advanced Algebra, 338	..	3	..
Trigonometry, 339	..	2	5
English, 342 and 344	3	3	3
Military Drill, 359	3	3	3

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 311	3	3	3
Analytical Chemistry, 312 and 313	7	7	7
English and History, 345 and 347	2	2	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	2	2
Modern Languages (elective), 348, 349, or 350	3	3	3

Senior Year.

Dyeing, 306	2	2	2
Industrial Chemistry, 315	3	3	3
Analytical Chemistry, 313	7	7	7
Organic Chemistry (laboratory), 314	4	4	4
Elect six periods from the following:			
English, 345 and 343	2	2	2
Business Law, 352	1	1	1
Military Drill, 359	3	2	2
Modern Languages. 348, 349, or 350	3	3	3

Description of Subjects.

306. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalies, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyes and their application to cotton.

After-treatment of direct colors, including diazotising and developing and the topping with basic colors. The application to cotton of basic colors, acid colors, mordant colors, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur colors, indigo, natural and artificial, aniline black, turkey red, and other insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabric composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalies and reducing agents on several samples taken from the different classes of dyestuffs. The use of hyraldite and other stripping agents.

Olney's *Textile Chemistry and Dyeing* is used as a text in connection with a course of lectures, which will include the consideration of many difficult problems that arise in the dye-house. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

307. **Dyeing Laboratory.**—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur colors. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a scrap-book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. SHUFORD.

CHEMISTRY.*

309. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied. together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

310. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. WILSON.

311. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Dyeing and elective for Seniors in Textile Industry. Professor WITHERS.

312. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis. together with laboratory work. The student is taught to detect the presence of the common metallic elements. as well as that of the acids. in unknown substances. Seven periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.

313. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis. special attention being given to the analysis of substances of technical importance. Seven periods. second and third terms. Required of Juniors in Dyeing. Seven periods. Required of Seniors in Dyeing. Doctor WILLIAMS.

314. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry*, translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Four periods. Required of Seniors in Dyeing. Doctor SYME.

315. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry.* A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Three periods. Required of Seniors in Dyeing. Professor WITHERS.

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*For further information, see course in Chemistry.

MECHANICAL ENGINEERING.*

316. Free-hand Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Two periods, first term. Required of Freshmen and first-year students. Mr. VAUGHAN.

317. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Two periods, second term. Required of Freshmen and first-year students. Mr. VAUGHAN.

318. Descriptive Geometry Drawing.—Elementary principles; cylinders, cones, and prisms; intersection development of surfaces; miscellaneous problems. Two periods, third term. Required of Freshmen. Mr. VAUGHAN.

320. Wood-work.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY.

321. Forge-work.—Exercises in working with iron, welding; use and care of forge-tools and fires. Two periods. Required of Freshmen. Mr. WHEELER.

324. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. PARK.

326. Boilers.—Steam generation; types, care and management; fittings and appliances; corrosion and incrustation; combustion of fuel; boiler power. Two periods, first term. Required of Juniors. Professor THOMAS.

327. Steam-engines.—Types—simple and compound and triple expansion, automatic, Corliss, rotary. Care and management. Indicators, indicated and brake horse-power, condensers. Two periods, second term. Required of Juniors. Professor THOMAS.

PHYSICS.†

331. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. HEWLETT.

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*For full information, see course in Mechanical Engineering.

†For full information, see course in Electrical Engineering.

MATHEMATICS.*

333. Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. Richardson and Mr. Sykes.

334. Algebra.—Wells's *New Higher Algebra.* Up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. Richardson and Mr. Sykes.

335. Algebra (Continued).—Wells's *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Required of Freshmen. Mr. Richardson and Mr. J. A. Park.

336. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Three periods, second term; five periods, third term. Required of Freshmen. Professor Yates, Mr. Richardson, and Mr. J. A. Park.

337. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor Yates, Mr. J. A. Park, and Mr. Richardson.

338. Advanced Algebra.—Wells's *New Higher Algebra.* Compound interest and annuities, permutations, combinations, continued fractions, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor Yates, Mr. J. A. Park, and Mr. Richardson.

339. Trigonometry.—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulations, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor Yates, Mr. J. A. Park, and Mr. Richardson.

ENGLISH.

340. A drill on the forms of the language; the correct relation of words; the sentence; the paragraph. Daily written exercise. Three periods. Required of first-year students. Doctor Summey and Mr. Bonn.

341. Introductory Composition and Rhetoric.—This course in the fundamentals of Rhetoric is made thoroughly practical. Students write instead of studying about how to write. The written work is accompanied by a steady drill on grammatical forms, accuracy, and ease of expression. The student is taught to plan all work, and then to develop his plan in simple, idiomatic English. Three periods a week. Required of Freshmen. Professor HILL, Doctor SUMMEY, and Mr. BONN.

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*For full information, see course in Engineering.

342. Rhetoric, Criticisms, Essays.—The student is taught the essentials of good style by constant practice. Themes in narration, description, and exposition receive in this course especial attention. Required of Sophomores. Three periods, first term. Professor HILL, Doctor SUMMEY, and Mr. BONN.

343. Argumentation.—A study of the methods of our best speakers, followed by the laws of argumentation, and the writing of exercises. Required of Seniors. Two periods, third term. Professor HILL.

344. American Literature.—By means of an introductory text and by much reading, students are introduced to what is best in the literature of their own country. Books are studied at first hand. Synopses, paraphrases, and critiques required. Three periods, second and third terms. Required of Sophomores. Professor HILL, Doctor SUMMEY, and Mr. BONN.

345. English Literature.—The development of English Literature through its great periods and through its representative men. Much parallel reading is required. In a general way Minto's plan of study is followed. Two periods, third term. Required of Juniors. Two periods, first and second terms. Required of Seniors. Professor HILL.

347. English History.—The first term of the Junior year is devoted to a study of English history. The text is supplemented by lectures on important periods. Two periods, first and second terms. Required of all Juniors. Professor HILL.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three or four hours per week, according to the size and convenience of the classes. When four hours are given, the class receives its instruction twice a week, and each time two hours in succession.

Students may take any one or all of the Modern Languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German, French and Spanish.

348. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Doctor RUDY.

349. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor RUDY.

350. Spanish.—Worman's *Modern Languages*, first and second Spanish books; a Spanish grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Doctor RUDY.

BUSINESS LAW AND CIVICS.

352. Business Law.—This course includes such subjects as contracts, agency, sales, negotiable paper, insurance, patent rights, etc. The purpose of the course is to teach the general principles of business law. Text-book: *Parsons' Laws of Business*. One period. Required of Seniors. President WINSTON.

POLITICAL ECONOMY AND GOVERNMENT.

353. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. President WINSTON.

354. Advanced Political Economy and Government.—Two periods. Elective for Seniors. President WINSTON.

MILITARY SCIENCE.

359. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first term. Two periods, second and third terms. Required of all classes except Seniors. Seniors are to either take drill or two extra hours in some other subject instead. Commandant and Officers of the Battalion.

360. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant YOUNG.

NORMAL COURSES.

- I. For Rural Teachers:
    - (a) Two-year Course.
    - (b) One-year Course.
    - (c) A Two Weeks' Spring Course.
- II. For City Teachers:
    - (a) Two-year Course.
    - (b) One-year Course.
    - (c) A Two Weeks' Spring Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and the College has a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the College, except in the May School.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	3	3
Nature Study { Plants	3	3	3
Nature Study { Animals	3	3	3
English	3	3	3
Mathematics	5	5	5
Military Drill	3	2	2

Second Year.

Farm Equipment	4	..	..
Soils	..	4	..
Crops	..	..	4
Plant Diseases	3	..	..
Physics	..	3	..
Botany	..	..	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	2	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Methods of teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	..	..
Diseases of Live-stock		5	
Botany	3		
Poultry	..	3	3
Entomology	..	..	3
Diseases of Plants	..	..	2
Agricultural Literature	1	1	1

Elective in any College department; *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing and others.

II. Courses for City Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Wood-work	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	3

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing	2	2	2
Wood-work	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	4	4	4
Military Drill	3	2	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology 3, Physiological Botany 3.

(b) ONE-YEAR COURSE.

Drawing	3	4	4
Wood-work	4	5	5
Forge-work	2	2	2
Architecture	2	..	..
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	2	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

The May School for Teachers.

MAY 3 TO 15, 1909.

The chief subjects of instruction in this course are Agriculture and Nature Study. Attention is also given to school gardens and the common branches are reviewed, meeting the legal requirement that teachers attend an institute once in each two years.

No fees are charged to this course. Board is supplied at $2.50 a week, and lodging at $1 a week.

DONATIONS.

The College makes thankful acknowledgment of the receipt of the following gifts during the year:

To the Electrical Engineering Department.

General Electric Company, Harrison, N. J.—Samples of Tungsten Tantalum and general incandescent lamps.

To the Mechanical Department.

The John-Manville Co.—A full set of insulating materials for steam and refrigeration.

To the Animal Husbandry Department.

American Saddle Horse Register.—Five volumes.
Dutch Belted Cattle Breeders' Record.—Nine volumes.
American Chester White Record.—Seven volumes.
Merino Sheep Breeders' Record.—Three volumes.
American Oxford Down Record.—Two volumes.
American Leicester Sheep Breeders' Record.—Two volumes.
National DeLaine Sheep Breeders' Record.—Three volumes.
Standard Poland China Breeders' Record.—Twenty-one volumes.

To the Textile Department.

Lahne & Co., Lowell, Mass.—Two pair iron lug straps.

Emmons Loom Harness Company, Lawrence, Mass.—Loom harness and reeds.

Hampton Company, Easthampton, Mass.—Mercerized yarns.

Draper Company, Hopedale, Mass.—One sateen loom, ball warper, and loom supplies.

American Enamel Company, Providence, R. I.—Lease rods.

Lowell Machine Shop, Lowell, Mass.—Loom.

American Moistening Company, Boston, Mass.—Complete humidifying system.

Woonsocket Machine and Brass Company, Woonsocket, R. I.—Balls for top rolls.

Kilburn-Lincoln Company, Fall River, Mass.—Loom supplies.

Corn Products Refining Company, Chicago, Ill.—One barrel corn starch.

Fairpoint Corporation, New Bedford, Mass.—Tubes and cones.

Tolhurst Machine Works, Troy, N. Y.—Hydro extractor.

Jones & Laughlin Steel Company, Pittsburg.—Shafting, hangers, and pulleys for dye-house.

Edward R. Ladew, New York.—Reduction on belting.

The Robert Schaelibaum Company, Providence, R. I.—Two sets patent grids.

Courtesies Extended to the Textile Department.

American Textile Manufacturer, Charlotte, N. C.
Textile Manufacturers' Journal, New York.
Fiber and Fabric, Boston, Mass.
Textile World Record, Boston, Mass.
The Tradesman, Chattanooga, Tenn.
American Industries, New York City.
Cotton, Atlanta, Ga.
American Cotton and Wool Reporter, Boston, Mass.
Mill News, Charlotte, N. C.
The Dyer and Calico Printer, London, Eng.
Cassella Color Company, New York City.
Pilot Cotton Mills, Raleigh, N. C.
Caraleigh Cotton Mills, Raleigh, N. C.
Raleigh Cotton Mills, Raleigh, N. C.

To the Rural Science Club.

International Harvester Company, Chicago, Ill.—New reversible extension head disc harrow.

CATALOGUE OF STUDENTS.

GRADUATES.

Name.	*Post-office.*	*Course.*
George Gilderoy Allen,	Hiddenite,	Tex.
Wiley Theodore Clay, B.E.,	Hickory,	M. E.
Thomas Doterer Eason, B.S.,	Charleston, S. C.,	Agr.
Weldon Thompson Ellis, B.E.,	Spencer,	M. E.
Wm. Carlyle Etheridge, B.Agr.	Manteo,	Agr.
Clarence Wilson Hewlett, B.E.,	Wilson,	E. E.
William Kerr, B.S.,	Bryson City,	Agr.
John Luther McKinnon, B.Agr.,	Laurinburg,	Agr.
Thomas Franklin Parker, B.Agr.,	Raleigh,	Agr.
Samuel Oscar Perkins, B.S.,	Muttenz,	Chem.
Vance Sykes, B.E.,	Efland, R. 2,	C. E.
James Clarence Temple, B.Agr.,	Sanford,	Chem.
Reid Tull, B.E.,	Kinston,	C. E.
Lillian Lee Vaughan, B.E.,	Franklin, Va.,	M. E.
Arthur John Wilson, B.S.,	Knoxville, Ill.,	Chem.

SENIOR CLASS.

John Camillus App,	Charleston, W. Va.,	Chem.
Frank Oscar Baldwin,	Raleigh,	Chem.
George Francis Bason,	Charlotte,	E. E.
John Leland Becton,	Goldsboro,	C. E.
Harwood Beebe,	Baltimore, Md.,	C. E.
William Lamar Black,	Mooresville,	E. E.
Asa Gray Boynton,	Biltmore,	C. E.
Frank Hamilton Brown,	Cullowhee,	Agr.
John Harvey Bryan,	Goldsboro,	M. E.
William Bryant Burgess,	Rocky Mount,	E. E.
Lewellyn Hill Couch,	Lexington,	E. E.
Claud Council Dawson,	Grifton,	Tex.
Alvin Deans Dupree,	Greenville,	C. E.
Raymond Rowe Eagle,	Statesville,	C. E.
Minnic Luther Eargle,	Delmar, S. C.,	Agr.
Isaac Herbert Farmer,	Wilson,	C. E.

Name.	*Post-office.*	*Course.*
BENJAMIN TROY FERGUSON,	Kimbolton,	Agr.
WARREN GROSS FERGUSON,	Southern Pines,	E. E.
PERCY LEIGH GAINEY,	Fayetteville, R. 7,	Agr.
JUNIUS TALMAGE GARDNER,	Shelby,	C. E.
SETH MANN GIBBS,	Middleton,	C. E.
MAURICE MORDECAI GLASSER,	Charleston, S. C.,	E. E.
MOSES HENRY GOLD,	Beaufort,	C. E.
JOHN DAVID GRADY,	Albertson,	Agr.
THOMAS DELAWARE GRIMSHAWE,	Montvale,	C. E.
DORSEY YATES HAGAN,	Greensboro,	C. E.
MAURICE HENDRICK,	Shelby,	Tex.
HERBERT WILLIAM KUEFFNER,	Durham,	C. E.
CLAUDE MILTON LAMBE,	Durham,	C. E.
CHARLES EDWARD LATTA,	Raleigh,	Tex.
BENJAMIN BUSSEY LATTIMORE,	Shelby,	C. E.
DAVID LINDSAY,	Stoneville, R. 1,	Tex.
JOHN HENRY LITTLE,	Pinetops,	E. E.
GEORGE LAFAYETTE LYERLY,	Hickory,	E. E.
CLARENCE TALMAGE MARSH,	Aulander,	C. E.
LARRY LEONIDAS McLENDON,	Wadesboro,	Agr.
DAVID JOHN MIDDLETON,	Warsaw, R. 2,	Agr.
JOHN SHAW PESCUD,	Raleigh,	C. E.
BENJAMIN FRANKLIN PITTMAN,	Tarboro,	E. E.
LAWRENCE LYON PITTMAN,	Whitakers,	C. E.
RUBLE POOLE,	Randleman, R. 3,	C. E.
HARRY ALEXANDER POWELL,	Fair Bluff,	Tex.
JAMES ALEXANDER POWELL,	Raleigh,	M. E.
THOMAS MILTON POYNER,	Poplar Branch,	C. E.
EDGAR ENGLISH SMITH,	Greensboro,	C. E.
JAMES LAWRENCE SMITH, JR.,	Duke,	C. E.
JESSE PAGE SPOON,	Hartshorn,	Agr.
JOHN SNIPES STROUD,	Bynum,	Tex.
JAMES FENTON TOWE,	Chapanoke,	E. E.
JOHN LAWRENCE VON GLAHN,	Wilmington,	C. E.
ROYALL EDWARD WHITE,	Aulander,	C. E.
JOHN C. WILLIAMS,	Duke, R. 1,	C. E.
WOODFIN BRADSHER YARBROUGH,	Locust Hill,	E. E.
JOHN FRANKLIN ZIGLAR,	Winston-Salem,	C. E.

JUNIOR CLASS.

Name.	*Post-office.*	*Course.*
John Allen Arey,	Elmwood,	Agr.
John William Barrett, Jr.,	Rocky Mount,	Agr.
Cecil DeWitt Brothers,	Conetoe,	C. E.
Thomas Kincaid Bruner, Jr.,	Raleigh,	Tex.
Charles Lee Clark, Jr.,	Weldon,	E. E.
Thorne McKinzie Clark,	Raleigh,	C. E.
Walter Miller Cowles,	Charlotte,	M. E.
John Bennett Craven,	Charlotte,	Chem.
Joseph Frank Davidson,	Statesville,	E. E.
William Samuel Dean,	Oxford,	Tex.
Carlton O'Neal Dougherty,	North, S. C.,	Tex.
Fred Atha Duke,	Raleigh,	C. E.
William Hunt Eaton,	Cleveland,	Agr.
Ralph Ringgold Faison,	Goldsboro,	Agr.
William Alexander Faison,	Goldsboro,	M. E.
Frank Lindsay Foard,	Winston-Salem,	Agr.
Roscoe Loomis Fox,	Waynesboro,	Tex.
Lewis Price Gattis,	Raleigh,	C. E.
Albert Sidney Johnston Goss,	Union, S. C.,	C. E.
Charlie Pool Gray,	Buxton,	C. E.
Andrew Hartsfield Green,	Raleigh,	Agr.
Cecil Linwood Griffin,	Manteo,	C. E.
William Roy Hampton,	Plymouth,	Chem.
John William Harrelson,	Lawndale,	M. E.
Gordon Harris,	Raleigh,	E. E.
George Harrison,	Enfield,	C. E.
Frank Hawks,	Kinston,	M. E.
Thomas Frederic Haywood,	Trenton,	C. E.
Leonard Henderson,	Salisbury,	M. E.
Bascombe Britt Higgins,	Leicester, R. 2,	Agr.
Daniel Harvey Hill, Jr.,	West Raleigh,	Chem.
Wayne Arington Hornady,	Burlington,	Agr.
Donald Barrett Iseley,	Burlington,	C. E.
John William Ivey,	LaGrange,	M. E.
William Fladger R. Johnson,	Marion, S. C.,	C. E.
Frederick John Jones,	New Bern,	C. E.
James Edward Latham,	Washington,	Agr.
Ralph Long,	Graham,	Agr.
Samuel Macon Mallison,	Washington,	C. E.

Name.	*Post-office.*	*Course.*
William Royden Marshall,	Rocky Mount,	M. E.
Ralph Cecil Mason,	Edenton,	Agr.
Arthur Ballard Massey,	Salisbury, Md.,	Agr.
Walker Morehead Millner,	Leaksville,	Tex.
Benjamin Franklin Montague,	Winston-Salem,	C. E.
Owen Moore,	Asheville,	Chem.
William Flaud Morris,	Ashboro,	M. E.
Samuel Loftin Oliver,	Mt. Olive, R. 2,	E. E.
Julius Monroe Parker,	Hunting Creek,	C. E.
John Gilbert Paschal,	Goldston,	E. E.
William Murdock Peck,	Wilmington,	C. E.
Isham Roland Peirce,	Warsaw,	Agr.
Peter Penick Pierce,	Pelham,	E. E.
Paul Miller Pitts,	Concord,	M. E.
John Moir Price,	Leaksville,	M. E.
Robert Richard Reinhardt,	Stanley Creek,	Agr.
Alfred Pratte Riggs,	Wanchese,	C. E.
Thomas Wood Robbins,	Durham,	E. E.
Joseph Henry Robertson,	Burlington,	E. E.
James Olin Sadler,	Charlotte, R. 12,	C. E.
Francis Webber Sherwood,	Raleigh,	Chem.
Robert Arnold Shope,	Weaverville,	C. E.
George Gray Simpson,	Norfolk, Va.,	Tex.
William Neville Sloan,	Franklin,	C. E.
Hugh Stuart Steele,	Yadkin Valley,	C. E.
Samuel Fatio Stephens,	Norfolk, Va.,	C. E.
Henry Newbold Sumner,	Hertford,	C. E.
Malvern Hill Terrell,	Old Fort,	C. E.
Claude Stratton Tate,	Littleton,	M. E.
John Dick Thomason,	Hickory,	M. E.
Frank Martin Thompson,	Raleigh,	Tex.
James Edwin Toomer,	Wilmington,	Chem.
Joseph Slaughter Whitehurst,	Elizabeth City,	C. E.
Oliver Gaines Whitley,	Albemarle,	C. E.
John Spicer Wilson,	Winston,	E. E.
Paul Adams Witherspoon,	Mooresville,	C. E.
Robert Job Wyatt,	Raleigh,	M. E.

SOPHOMORE CLASS.

James Cicero Albright,	Rock Creek,	E. E.
Alfred Scales Armfield,	Statesville,	Tex.
Charles Gray Armfield,	Statesville,	C. E.

Name.	*Post-office.*	*Course.*
Robert Alban Atkinson,	Lenoir,	E. E.
Robert Kenneth Babington,	Gastonia,	E. E.
Thomas Roper Baldwin, Jr.,	Mt. Gilead,	Tex.
Andrew Jackson Beall,	Charlotte,	E. E.
John Burgess Berrier,	Lexington, R. 3,	E. E.
Fred McCullough Black,	Mooresville,	E. E.
Thomas Sawyer Bond,	Windsor,	C. E.
Roy Bowditch,	Toe Cane,	E. E.
George Washington Braddy,	Westbrook,	E. E.
Carl Ray Bradley,	Old Fort,	E. E.
John Benjamin Bray,	Sligo,	C. E.
James Sexton Bray,	Elkin,	Agr.
Thomas Johnson Brevard,	Fairview,	Agr.
Elton Elroy Buck,	Hampton, Va.,	C. E.
Von Porter Byrum,	Charlotte, R. 3,	M. E.
Henry Roy Cates,	Swepsonville,	Agr.
Joseph Blount Cherry,	Windsor,	E. E.
Da Costa Moore Clark,	Old Fort,	E. E.
Karl Barringer Cline,	Concord,	E. E.
Herbert George Coughenour,	Scotland Neck,	E. E.
Jesse Kea Council,	Wananish,	C. E.
John Monroe Council,	Wananish,	E. E.
William Henry Crow,	Monroe,	E. E.
William Earle Davis,	Hiddenite,	E. E.
Thomas Theodore Dawson,	Grifton,	C. E.
Edwin Gray Deans,	Wilson,	C. E.
James Leonidas Dunn,	Scotland Neck,	Agr.
Joseph Oscar Eller,	Berlin,	Agr.
Walter Frederick Eller,	Berlin,	M. E.
Robert Winston Etheridge,	Selma,	Chem.
Risden Bennett Gaddy,	Monroe,	E. E.
Ransom Eaton Gill,	Raleigh,	E. E.
William Thomas Grimes, Jr.,	Hamilton,	Chem.
Walter Pirson Hardee,	Stem,	Agr.
Thomas Devin Harris,	Oxford,	C. E.
Frank Hawks,	Kinston,	M. E.
Ernest Albert Haynes,	Raleigh,	C. E.
Edmund Burke Haywood,	Raleigh,	C. E.
Albert Roland Hicks,	Faison,	E. E.
Rufus Williams Hicks, Jr.,	Wilmington,	M. E.
Lyda Alexander Higgins,	Leicester, R. 2,	Agr.

Name.	*Post-office.*	*Course.*
Clinton White Hinshaw,	Winston-Salem,	M. E.
Murphy McNeill Holloway,	Cardenas.	M. E.
Louie Lee Hood,	Asheville.	C. E.
Robert Frank Jones.	Washington,	C. E.
Clyde Raymond Jordan,	Gulf,	E. E.
Linwood A. Joyner,	Jackson,	E. E.
Luther Hill Kirby,	Lenoir,	C. E.
William Hugh Kitchin,	Scotland Neck,	Agr.
Mark Clinton Lasitter,	Snow Hill,	C. E.
Edward Hugh Lee, Jr.,	Raleigh.	Agr.
Ashe Lockhart,	Wadesboro,	Agr.
Ulphian Carr Loftin,	West Raleigh,	Agr.
William Leake Manning,	Henderson,	E. E.
Melvin Solomon Mayes,	Stem,	M. E.
Frank Neeley McDowell,	Charlotte,	Agr.
Lennox Polk McLendon,	Wadesboro,	Agr.
Samuel Huxley McNeely,	Waxhaw,	E. E.
Leon Davis Moody,	East Laporte,	M. E.
Eugene Boise Moore,	Morven,	E. E.
Robert Lee Morgan,	Wilson,	M. E.
Herbert Pennell Moseley,	Kinston,	C. E.
Harry Mott,	Mooresville,	Agr.
Robert Livingston Murphy,	Morganton,	M. E.
William McCormick Neale,	Greensboro,	M. E.
Raymond Otterbourg,	Charlotte,	M. E.
Gus Palmer,	Gulf,	Agr.
Joe Baxter Parks,	Concord,	E. E.
William Casper Pennington,	Thomasville,	M. E.
William Ransome Phillips,	Dunn,	E. E.
James Bruce Price,	Leaksville,	E. E.
Frank Townley Redfearn,	Monroe,	E. E.
Archie Knight Robertson,	Rowland,	Agr.
Jay Frederick Robinson,	Hampton, Va.,	C. E.
Carl Collins Sadler,	Charlotte,	C. E.
Leon Raymond Sandford,	Norfolk, Va.,	C. E.
Earle Aloysius Siedenspinner,	Washington, D. C.,	Chem.
John Waldorf Sexton,	Salem Church,	C. E.
Carl Siler Slagle,	Franklin,	Agr.
Edwin Harrison Smith,	Weldon,	C. E.
Henry Lee Smith,	Dunn,	C. E.
John Francis Speight,	Whitakers,	C. E.

Name.	*Post-office.*	*Course.*
Samuel Adison Spencer,	Ashboro,	M. E.
St. Julian Lachicotte Springs,	Georgetown, S. C.,	Agr.
Charles Burt Stainback,	Henderson,	E. E.
Thomas Barnes Stansel,	Allenton,	Chem.
William Clark Styron,	Washington,	M. E.
Thomas Bryan Summerlin,	Mt. Olive,	E. E.
Lloyd Hurst Swindell,	Raleigh,	Tex.
Kenneth Spencer Tanner,	Charlotte,	Tex.
Walter Clyburn Taylor,	Rhodhiss,	Tex.
Thomas Hampton Thompson,	Thomasville,	M. E.
Isaac Norris Tull,	Kinston,	E. E.
Clement Manly Ware,	Morehead City,	C. E.
Charles Emmette Walton,	Hamilton, Ga.,	E. E.
Howard W. Welles, Jr.,	Poughkeepsie, N. Y.,	E. E.
David Rand Wellons,	Smithfield,	C. E.
John Stafford Wilson,	Charlotte,	Tex.
Edward Leigh Winslow,	Hertford,	C. E.
Daniel Cutts Young,	Cary,	M. E.

FRESHMAN CLASS.

Charles Vance Abernathy,	Shelby,	E. E.
Harvey Durward Abernethy,	Hickory,	E. E.
Hazel Robinson Aiken,	Hickory,	E. E.
Graham Hudson Anthony,	Shelby,	C. E.
John Erskine Ardrey,	Pineville,	C. E.
Charles Raymond Austin,	Charlotte, R. 8,	E. E.
William Bailey,	Raleigh,	M. E.
Aubrey Leland Baker,	Raleigh,	Tex.
Robert Jones Barbee,	Raleigh,	C. E.
Tollie Chester Barber,	Pinnacle,	E. E.
John Mann Beal,	Rocky Mount, R. 3,	Agr.
Charles Edward Bell,	Kinston,	C. E.
Hinton Quinerly Best,	Grifton,	E. E.
Julius Hufham Bivens,	Cottonville,	Agr.
Alan Thurman Bowler,	Wilmington,	C. E.
Rufus Tucker Boylan,	Raleigh,	Agr.
Joseph Malcolm Bradfield,	Charlotte,	E. E.
James Howard Brown,	Charlotte, R. 4,	Agr.
Guy Kedar Bryan,	Tampa, Fla.,	C. E.
Kit Bryan,	Catharine Lake, R. 1,	C. E.
Henry Carl Buchan,	Manly,	Agr.

Name.	*Post-office.*	*Course.*
Charles Marshall Burroughs,	Portsmouth, Va.,	Chem.
Brice LeGrier Caldwell,	Concord,	M. E.
James Walter Call,	Mocksville,	M. E.
Henry Caleb Clay,	Hickory,	M. E.
Marshall Cloud Corl.	Concord.	E. E.
Charlie Albin Daniels,	New Bern,	M. E.
William Hurd Davis,	Marshville, R. 1.	E. E.
Edwin Sexton Dewar,	Raleigh,	M. E.
James Henry Durham, Jr.,	Wilmington,	E. E.
John Ivey Eason,	Speight's Bridge,	Agr.
James Thompson Edwards,	Morehead City,	M. E.
Julian Delk Elliott,	Edenton,	Tex.
Earl Montier Evans,	Raleigh,	M. E.
Robert Stackhouse Fairly,	Laurinburg,	Agr.
Archer Pleasant Farmer,	Fuquay Springs,	E. E.
James Grey Fennell,	Wilmington,	E. E.
Clem M. Flowers,	Maribel,	Agr.
Daniel Ralph Freeman,	Charlotte,	Agr.
Malthus Reamer Freeman,	Taylor,	Agr.
George Winbury Gillette,	Marines,	E. E.
Loomis McArthur Goodwin,	Raleigh,	E. E.
Robert Walter Graeber,	Concord,	Agr.
Charles Benjamin Green,	Kittrell,	C. E.
Charles Ganzer Hall,	Wilmington,	C. E.
William James Hall,	Clemmons,	E. E.
Thomas Jefferson Hardison,	Morven,	Agr.
Marmaduke James Hawkins, Jr.,	Ridgeway,	E. E.
Paul Hendren,	Chadbourn,	E. E.
Russell Poindexter Hewlett,	Wilson,	E. E.
James Hilliard,	Cary,	E. E.
Ernest Russell Hine,	Old Town,	C. E.
David Raymond Hinkle,	Lexington,	E. E.
Robert Lawford Holder,	Durham,	M. E.
James Roy Hutchison,	Charlotte, R. 7,	Tex.
Eugene Johnston,	Mooresville,	E. E.
Robert Thomas Joyner,	Rocky Mount,	E. E.
George Shirley Kilpatrick,	Kinston,	Tex.
John Smedes Knox,	Raleigh,	E. E.
Fabius Henry Kohloss,	Columbia,	C. E.
Wingate Agusta Lambertson,	Rich Square,	E. E.
Walter Moore Lambeth,	Fayetteville,	Tex.

Name.	*Post-office.*	*Course.*
John Emsley Lee,	Monroe,	Tex.
Richard Henry Lewis, Jr.,	Kinston,	M. E.
Thomas Seigle Linton,	Raleigh,	E. E.
Sidney MacDonald,	Wilmington,	C. E.
Joseph Jenkins Mackay, Jr.,	Raleigh,	M. E.
Grady Gilmer Marler,	Winston,	Tex.
Jacob Lee Martin,	Graham,	E. E.
William Corteanus Massee,	Marshallville, Ga.,	Agr.
Eugene Richard McCracken,	Graham,	M. E.
Charles McKimmon,	Raleigh,	Chem.
Charles Richard McManaway,	Charlotte,	M. E.
Roger Williams Montague,	Winston,	Tex.
Jacob O. Moose,	Mt. Pleasant,	E. E.
Robert Lee Morrison,	Concord,	C. E.
Joel William Moye,	Farmville,	Agr.
Albertus Pharr Murdock,	Statesville,	C. E.
Horace Moore Neal,	Monroe,	E. E.
James Caldwell Neal,	Charlotte, R. 8,	E. E.
William Shephard Nicholson,	Union, S. C.,	Tex.
Robert Andrew Patton,	Franklin,	Agr.
Fred Taylor Peden,	Wilkesboro,	Agr.
John Taylor Peden, Jr.,	Wilkesboro,	C. E.
Silas Bruce Phifer,	Cleveland, R. 2,	E. E.
Josephus Plummer Quinerly,	Grifton,	Agr.
Sherman Ramsey,	Statesville,	E. E.
Benjamin Smith Robertson, Jr.,	Haw River,	Tex.
John Wesley Rollinson,	Elizabeth City,	C. E.
George Romulus Ross,	Ashboro,	Agr.
Graeme William Ross,	Charlotte,	E. E.
DeBerniere Hooper Sanders,	Smithfield,	E. E.
Ira Short,	Boardman,	M. E.
Orin Morrow Sigmon,	Hickory,	M. E.
William Ruffin Smith,	Charlotte,	E. E.
Charlie Augustine Speas,	Cana, R. 2,	C. E.
Robert Leak Steele, Jr.,	Rockingham,	Tex.
Lucius Esek Steere, Jr.,	Charlotte,	E. E.
Marvin Merritt Stephenson,	Angier,	M. E.
William Shelburn Thomas,	Raleigh,	E. E.
Thomas Whitmell Thorne,	Littleton,	M. E.
Franklin Wood Thorp,	Rocky Mount,	Agr.

Name.	*Post-office.*	*Course.*
William Purcell Thurston,	Burlington,	C. E.
Fred Goode Tucker,	Henderson,	E. E.
Robert Terry Wade,	Morehead City,	C. E.
Edwin Wadsworth,	Charlotte,	E. E.
Edward Harvie Ward,	Tarboro,	C. E.
James Hunter Watson,	Raleigh,	Chem.
Nathaniel Sullivan Wilson, Jr.,	Winston,	Tex.
William Page Wilson,	Goldsboro,	Tex.
Walter Booker Winfree,	Wadesboro, R. 3,	Agr.
Marion Fuller Wyatt,	Raleigh,	C. E.

THE TWO-YEAR COURSES.

First Year.

John Howard Abernethy,	Stanley,	M. A.
Hiram Miller Armentrout,	High Point,	M. A.
William Benjamin Aycock,	Goldsboro,	App. E.
Claude Bernard Baker,	Hickory, R. 1,	App. E.
Bennie Frank Braddy,	Washington,	M. A.
Joe Windley Buchanan,	Roper,	M. A.
Don McD. Burgess,	High Point,	M. A.
Wm. Sumner Reddick Burwell,	Kittrell,	Tex.
Henry Duncan Cooke,	Haw River,	Tex.
James Horton Doughton,	Guilford College,	M. A.
Harry Falls,	Kings Mountain,	Tex.
Lawrence Bynum Farris,	Cherryville,	Tex.
Archie Boyd Fletcher,	Gibson,	M. A.
Emmett Elias Fulp,	Fulp,	Tex.
Eckie Haywood Gattis,	Raleigh,	App. E.
John Krause Gunn,	Tampa, Fla.,	App. E.
Willie James Hankins,	Spray,	Tex.
Henry McCombs Heath,	Matthews,	Tex.
John Jackson Hedrick,	Wilmington,	M. A.
Lary Tucker Hill,	Bosley,	Tex.
Thomas Greenwood Hill,	Louisburg,	App. E.
Carl Horn,	Rutherfordton, R. 3,	Tex.
Lester McAlwaine Jacobs,	New Bern,	App. E.
Andrew Jones,	Messic,	M. A.
Edgar Nelson Keller,	Kings Mountain,	Tex.
Winston Elijah Lawrence,	Raleigh, R. 4,	App. E.
Bascom Campbell Livingston,	Tryon,	M. A.
Nathaniel Rayborn Martin,	Danbury,	App. E.

Name.	*Post-office.*	*Course.*
Gorman McPhail,	Clinton, R. 5,	App. E.
Neill McQueen,	Fayetteville,	M. A.
Ronald Earl Mewborn,	Kinston,	M. A.
Charles Ernest Mills,	Mooresville,	App. E.
Andrew Weaver Moody,	East La Port,	M. A.
Nathaniel Street Munroe,	Goldsboro,	App. E.
Woodard Myers,	Charlotte,	M. A.
James Angus Niemyer,	Hamlet,	M. A.
William Owen Potter,	Cash Corner,	M. A.
Robert William Powell,	Goldsboro,	App. E.
Edward Alexander Robbins,	Charlotte, R. 2,	Tex.
Josiah Herbert Robertson,	Selma,	App. E.
John Leonidas Scott, Jr.,	Graham,	Tex.
David Walter Seifert,	Wilmington,	M. A.
Samuel Neill Smith,	Raleigh,	App. E.
Clarence Alexander Stedman,	Greensboro,	App. E.
William Augustus Stokely,	Elizabeth City, R. 1,	M. A.
William Perry Sugg,	Princeton,	M. A.
Thomas Johnson Summey,	Brevard,	M. A.
Grover Cleveland Tilley,	Rougemont,	M. A.
William Beverley Whitley,	Smithfield,	Tex.

Second Year.

Robert Daniel Bland,	Currie,	M. A.
Robert Graham Person,	Laurel,	M. A.
Hillary Dowdy Potter,	Cash Corner,	M. A.
James Richard Sugg,	Wilson,	App. E.

THE ONE-YEAR COURSE IN AGRICULTURE.

Neily Orman Alexander,	Matthews, R. 17,	Agr.
James Clark Archbell,	Washington,	Agr.
Edward Sidney Blount,*	Roper,	Agr.
John Frank Butler,	Hoffman,	Agr.
Archie Graham McLeod,	Raeford, R. 1,	Agr.
Lewis McKee Morrison,	Concord, R. 6,	Agr.
Bert Price,	Ellenboro,	Agr.
William Henry Pritchard,	Elizabeth City,	Agr.
George Park Robinson,*	Matthews,	Agr.
Arthur Sharpe,	Greensboro, R. 6,	Agr.
Frank Thomason,	Salisbury, R. 1,	Agr.

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*Registered in Textile.

IRREGULAR.

Name.	*Post-office.*	*Course.*
HENRY ELLISON TRIPPE, JR.,	Bonnerton,	Agr.
WM. HERBERT DOUGHTY BANCK,	Wilmington,	C. E.
JOHN BOONE,	Lumberton,	Agr.
CHARLES LEE CRUSE,	Spencer,	Agr.
WILLIAM HERBERT ELLIS,	Wilson,	Agr.
JAMES MILL GRAY,	Cullasaja,	Agr.
GEORGE WASHINGTON HILL,	Trinity,	Agr.
JAMES NEWTON LOWRANCE,	Mooresville,	Agr.
CLAUDE LENOIR MAST,	Valle Cruces,	Agr.
JAMES MORGAN SHERMAN,	Ash Grove, Va.,	Agr.
CLAUDE WOOD THOMPSON,	Elmwood,	Agr.
JOSEPH TYSON WARD,	Wilson,	Agr.
FRED BARNETT WHEELER,	Archdale,	M. E.

SPECIAL.

WOODBERRY LENNON,	Lumberton,	C. E.
JOHN DIXON LINEBERGER, JR.,	Shelby,	Tex.
CHARLES HENRY MAYNOR,	Graham,	M. E.
CANTWELL FAULKNER MUCKENFUSS,	Charleston, S. C.,	Agr.
HERBERT NATHANIEL STEED,	Steeds,	Tex.

WINTER COURSES.

OFY THOMPSON BEASLEY,	Louisburg,	Agr.
OSCAR WELLS COX,	Wilmington,	Agr.
PAUL KINDRED DRYE,	Mt. Pleasant,	Tex.
JAMES MASTIN FAGG,	Red Shoals,	Agr.
HENRY EDWARD FOXWELL, JR.,	Edenton,	Agr.
ROY FRANKLIN HARTMAN,	Hartman,	Agr.
THOMAS HORNADAY,	Burlington, R. 10,	Agr.
LOVIE HARRIS HUNTER,	Charlotte,	Agr.
SHADE RUFUS JOINES,	North Wilkesboro,	Agr.
ALLEN HENRY ALEXANDER LEE,	Dunn,	Agr.
J. YOUNG TODD,	Due West, S. C.,	Agr.

ONE-WEEK COURSE IN AGRICULTURE.

HEFLIN HENRY BATTEN,	Wendell,	Agr.
J. P. CHAMBLEE,	Wakefield,	Agr.
ENOCH MARTIN DODSON,	Pinnacle, R. 3,	Agr.
JOHN EDMON STONE,	Pilot Mountain,	Agr.

MAY SCHOOL FOR TEACHERS.

Name.	*Post-office.*
Barnette William Allen,	Kittrell, N. C.
Rosa Ethel Barrow,	Raleigh, N. C.
Daisy Lee Bland,	Sanford, N. C.
Rose Bland,	Sanford, N. C.
Ernestine Nolier Booker,	Apex, N. C.
Martha Lizzie Eason,	Gatesville, N. C.
Lizzie Hodges,	Washington, N. C.
Luella H. Holloway,	Raleigh, N. C.
Kenneth H. McIntyre,	Carl, N. C.
Maggie Mae Mitchell,	Reidsville, N. C.
Tillie Goldie Ranes,	Wake Forest, N. C.
Emet Robinson,	Beaver Creek, N. C.
William Henry Wynne,	Winterville, N. C.

EIGHTEENTH ANNUAL COMMENCEMENT.

MAY 29, 1907.

Degrees Conferred.

BACHELORS OF AGRICULTURE.

Jacob Tatum Eaton.
Benjamin Bryan Everett.
Lawrence James Herring.
Albert Carl Jones.
Lafayette Franck Koonce.
James Elwood Overton.
Thomas Franklin Parker.
Arthur Lee Paschall.
John Ed. Turlington.
Edmund Farriss Ward.
David Lyndon White.

BACHELORS OF SCIENCE.

In Industrial Chemistry.

Lewis Edgar Lougee.
Henry Kreiger McConnell.
Henry Starbuck Montague,
James Kemp Plummer,
Arthur John Wilson.

BACHELORS OF ENGINEERING.

In Civil Engineering.

Herbert Scandlin Battie.
Seba Eldridge.
Clement Leinster Garner.
Roy Joseph Gill.
Philip William Hardie.
Guy Francis Hinshaw.
Oscar Franklin McNairy.
John Lightfoot Morson.
Guy Pinner.
Leon Jacob Schwab.
Vance Sykes.
Luther Russell Tillett.
John Jackson Wells.

In Electrical Engineering.

Joe Pittman Bivens.
Carney John Bryan.
Lindsay Ferguson Carleton.
Robert Hill Carter.
John Lindsay Ferguson.
Elias Van Buren Fowler.
Robert Strickler Graves.
George Rom Hardesty.
Joktan LaFayette Hemphill.
William Whitmore Jones.
Frank Curtis Michael.
Fred Maynard Parks.
John Oscar Shuford.
Cecil Bernard Whitehurst.

In Mechanical Engineering.

Eugene Franklin Meador,
Bennett Taylor Mial,
John Maple Mills,
Winslow Gerald Pitman,
William Brooks Truitt,
Lindsay Marade Weaver.

In Textile Industry.

John Washington Clark, B.E.,
Lovic Rodgers Gilbert.
William Norman Holt.

CIVIL ENGINEER.

George Frederick Syme, B.S.

HONORS.

HONORS IN SCHOLARSHIP.

For Four Years.

C. L. Garner.
W. B. Truitt,

FOR 1906-'07.

Senior Class.

S. Eldridge.
C. L. Garner,
H. K. McConnell.
W. B. Truitt.

Junior Class.

F. H. Brown,
R. R. Eagle,
M. L. Eargle.
P. L. Gainey,
D. Y. Hagan,
H. W. Kueffner.
David Lindsay,
C. T. Marsh.
E. E. Smith,
J. P. Spoon.
J. L. VonGlahn.

Sophomore Class.

J. W. Harbelson,
R. C. Mason.

Freshman Class.

L. P. McLendon,
C. E. Walton.

First Year Mechanic Arts.

H. C. Clay.

HONORS FOR PUNCTUALITY.

E. V. Fowler,
R. J. Gill,
L. A. Higgins,
L. L. Hood,
L. F. Koonce,
D. Lindsay.
C. T. Marsh,
G. L. Miller,
L. D. Moody,
W. C. Pennington,
R. G. Person.
L. L. Pittman,
R. Poole,
T. M. Poyner,
J. T. Ward,
J. C. Williams.

FRESHMAN PRIZES FOR AGRICULTURAL LABOR.

First Prize, $10.00, ...	L. A. Higgins.
Second Prize, $5.00, ...	G. W. Hill.

REGISTER OF ALUMNI.

CLASS OF 1893.

Name.	*Degree.*	*Address.*
Robert Wilson Allen,	B. E.,	Sanford, N. C.
Superintendent of Graded School.		
Samuel Erson Asbury,	B. S.,	College Station, Texas.
M. S. 1896. First Assistant State Chemist.		
Henry Emil Bonitz,	B. E.,	Wilmington, N. C.
Architect.		
Frank Fuller Floyd,	B. E.,	Knoxville, Tenn.
Jellico Coal Mining Co.		
Charles Duffy Francks,	B. E.,	Richlands, N. C.
Superintendent of Graded Schools.		
Edward Moore Gibbon,	B. E.,	Charlotte, N. C.
Civil Engineer The Engineering Company of America.		
George Pender Gray,	B. S.,	Montgomery, Ala.
Commercial Traveler Marks & Gayle.		
Charles Bolling Holladay,	B. E.,	Wilmington, Del.
Treasury Department The Dupont Co.		
William McNeill Lytch,	B. E.,	Laurinburg, N. C.
Superintendent Laurinburg Oil Co.		
James William McKoy,	B. E.,	Black Mountain, N. C.
Civil Engineer and Merchant.		
Walter Jerome Mathews,	B. E.,	Goldsboro, N. C.
Electrician and Chief Engineer for the Eastern N. C. Asylum for Insane.		
Frank Theophilus Meacham,	B. S.,	Statesville, N. C.
M. S. 1894. Superintendent State Test Farm.		
Carl DeWitt Sellars,	B. E.,	Greensboro, N. C.
Cone Export and Commission Co.		
Charles Edgar Seymour,*	B. S.,	Raleigh, N. C.
Farmer.		
Buxton Williams Thorne,	B. E.,	Holly Springs, Miss.
Cashier Peoples Bank.		
William Harrison Turner,	B. E.,	Winston-Salem, N. C.
Broker and Wholesale Dealer in Mill Feed and Grain.		

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*Deceased.

It is the purpose of the College to keep in touch with the Alumni.
Please notify the Registrar promptly of any change in business or address.

CHARLES BURGESS WILLIAMS, B. S., West Raleigh, N. C.
M. S. 1896. Director of N. C. Experiment Station.

LOUIS THOMAS YARBROUGH, B. E., Raleigh, N. C.
Clerk Raleigh Post-office.

SAMUEL MARVIN YOUNG, B. E., Raleigh, N. C.
Salesman Richmond Hardware Co.

CLASS OF 1894.

CHARLES EDWARD CORPENING, B. E., Lenoir, N. C., R. F. D. 3.
Farmer and Dealer in Lumber.

DAVID COX, JR., B. E., Hertford, N. C.
County Surveyor; also in employ of Yeopim Lumber Co.

ROBERT DONNELL PATTERSON, B. S., Chase City, Va.
M. S. 1898. Cashier First State Bank.

CHARLES PEARSON, B. E., Summerville, S. C.
Civil Engineer.

ZEBBIE GEORGE ROGERS, B. E., Washington, D. C.
Inspector of Building Construction Baltimore and Ohio Railroad.

JOHN HYER SAUNDERS, B. E., Rocky Mount, N. C.
Locomotive Engineer Atlantic Coast Line Railway.

BENJAMIN FRANKLIN WALTON, B. S., Raleigh, N. C., R. F. D. 1.
Farmer.

JOHN McCAMY WILSON, B. E., Spartanburg, S. C.
Secretary and General Manager of Russel-Compton Co., Founders and Machinists.

CLASS OF 1895.

THOMAS MARTIN ASHE* B. E., Raleigh, N. C.

JAMES ADRIAN BIZZELL, B. S., Ithaca, N. Y.
M. S. 1900. Ph. D. Cornell University. Chemist N. Y. State College of Agriculture.

JOHN ISHAM BLOUNT, B. E., Birmingham, Ala.
C. E. 1897. M. E. Cornell University. Owner Machinery Business of J. I. Blount & Co.

---

*Deceased.

Name.	*Degree.*	*Address.*	
James Washington Brawley,	B. S.,	Greensboro. N. C.	Superintendent of Agents Southern Life and Trust Co.
William Austin Bullock,	B. S.,	Amsterdam, Ga.	General Superintendent of Tobacco Plantation A. Cohn & Co.
David Clark,	B. E.,	Jonesboro, N. C.	M. E. 1896, C. E. 1897. M. E. Cornell University 1898. President Eugenia Manufacturing Co., also Clark Manufacturing Co.
George Washington Corbett, Jr.,	B. E.,	Currie. N. C., R. F. D. 2.	Of firm of Corbett & Corbett, Manufacturers of Lumber.
Edwin Speight Darden,	B. S.,	Wilson, N. C.	Bookkeeper Clark, Jones & Bass.
William Kearney Davis, Jr.,	B. E.,	Marion. S. C.	Superintendent Cotton Mills.
Joseph Charles Dey,	B. S.,	Norfolk, Va.	Produce Broker.
Lee Borden Ennett,	B. S.,	Cedar Point, N. C.	Farmer and County Superintendent of Schools.
Isaac Henry Faust,	B. E.,	Norlina, N. C.	Secretary and Treasurer Lewis Lumber Co.
Charles Willis Gold,	B. S.,	Raleigh, N. C.	Secretary and Superintendent of Agencies of the Jefferson Standard Life Insurance Co.
William Henry Harriss,	B. E.,	Atlanta, Ga.	B. S. 1895, M. E. 1896. Pres. and Gen. Mgr. Bellevue Mills Co., Pres. and Gen. Mgr. Harriss Mfg. Co., Gen. Mgr. Hamilton-Corborlt Cotton Mills.
Christopher Miller Hughes,	B. E.,	Fayetteville, N. C.	B. S. 1899. Lumber Business with W. J. McDiarmid & Co.
Malcolm Beall Hunter,	B. E.,	Cambridge. Penn.	Philadelphia Bell Telephone Co.
Samuel Christopher McKeown,	B. E.,	Sumter, S. C.	The Sumter Telephone Manufacturing Co.
Mann Cabe Patterson,	B. E.,	Durham, N. C.	Machinist American Tobacco Co.
Abram Hinman Prince,	B. S.,	San Augustine, Texas.	Farmer.
Charles Marcellus Pritchett,	M. E.,	Charlotte, N. C.	C. E. 1896. Engineer.
Victor Vashti Privott,	B. E.,	Sanford, N. C.	Chief Engineer and Machinist Sanford Cotton Mill.

Name. *Degree.* *Address.*

HOWARD WISWALL, JR., B. E., Marion. S. C.
Johnson & Wiswall, Civil Engineers.

CHARLES GARRETT YARBROUGH, B. E., Chicago, Ill.
Constructing Engineer Western Electric and Manufacturing Co.

CLASS OF 1896.

DANIEL ALLEN, B. S., Raleigh, N. C.
Traveling Salesman.

GEORGE STRONACH FRAPS, B. S., College Station, Texas.
Ph. D. Johns Hopkins University. State Chemist and Chemist Texas Experiment Station.

MARION JACKSON GREEN, B. S., Charlotte, N. C.
Pattern Maker Cole Manufacturing Co.

JOHN HOWARD, B. S., Middleboro, Ky.
Treas. and Gen. Mgr. Rossland Coal Co., Pres. Black Hawk Coal Co.

WILLIAM COLBERT JACKSON, B. S., Ayden, N. C.
Vice-President J. R. Smith Mercantile Co.

ROBERT GRAHAM MEWBORNE, B. S., Louisville, Ky.
Chemist Kentucky Tobacco Product Co.

LEVI ROMULUS WHITTED, B. S., Washington, D. C.
C. E. 1897. Structural Engineer U. S. Treasury Department.

HENRY LLOYD WILLIAMS, B. S., Cofield, N. C.
Manager of Saw Mill, Cofield Manufacturing Co.

CLASS OF 1897.

JOSEPH SAMUEL BUFFALOE, B. S., Garner, N. C.
M. D. Baltimore Medical College. Physician.

JOHN WILLIAM CARROLL, B. S., Wallace, N. C.
M. D. University of Maryland 1903. Physician.

CHARLES EDWARD CLARK, B. S., Charlotte, N. C.
Market Gardener and Supt. of the Farmers' Co-operative Demonstration Work in Mecklenburg County, U. S. Department of Agriculture.

WM. ALEXANDER GRAHAM CLARK, B. S., Jonesboro, N. C.
M. E. Cornell University. Special Agent Dept. of Commerce and Labor, U. S. A., to visit Hawaii, Japan, China, India, Egypt and Turkey.

NICHOLAS LOUIS GIBBON, B. S., Biddeford, Me.
Mill Engineer Saco & Pettee Machine Shops.

Name. *Degree.* *Address.*

Ceburn Dodd Harris, B. S., Raleigh, N. C.
A. M. Cornell University. Assistant Chemist and Microscopist N. C. Department of Agriculture.

Jere Eustis Highsmith, B. S., Parkersburg, N. C.
Farmer.

Clyde Bennett Kendall, B. S., Washington, D. C.
Assistant Topographer U. S. Geological Survey.

Sydney Gustavus Kennedy, B. S., Sanford, Fla.
With Atlantic Coast Line Railroad Company.

Joseph Lawrence Knight, B. S., Dewey, Fla.
Turpentine Operator Dewey Co.

Walter Jones McLendon, Jr., B. S., Marshall, N. C.
President and General Manager Capitola Manufacturing Co.

Repton Hall Merritt, B. S., Raleigh, N. C.
Secretary and Treasurer Powell & Powell (Incorporated).

Albert Hicks Oliver, B. S., Eastover, S. C.
Manager of Goodwill Plantation.

Hugh Williams Primrose,* B. S., Raleigh, N. C.
M. S. 1900.

Willis Hunter Sanders, B. S., Roanoke Rapids, N. C.
Superintendent of Power Plants Roanoke Navigation and Water-power Co.

Thomas Jehu Smithwick, Mt. Airy, N. C.
Chief Engineer and Electrician N. C. Granite Corporation.

Jordan Lea Watson, B. S., Atlanta, Ga.
Salesman Allis-Chalmers Co.

Bradley Jewett Wootten,* B. S., Wilmington, N. C.
Lieutenant United States Army.

CLASS OF 1898.

Dorsey Frost Asbury, B. S., Washington, D. C.
Draftsman Naval Gun Factory.

Sidney Hamilton Beck, B. S., Washington, D. C.
Marine Engineer Navy Department.

Anson Elikem Cohoon, B. S., Portland, Oregon.
Forest Service U. S. Department of Agriculture.

Hugh McCullom Curran, B. S., Washington, D. C.
Forest Service U. S. Department of Agriculture.

---

*Deceased.

Name.	*Degree.*	*Address.*
Benjamin Carey Fennell,	B. S.,	Atlanta, Ga.
M. E. 1900. Manager Southern Office American Blower Co.		
Alpheus Rountree Kennedy,	B. S.,	Quincy, Mass.
Draftsman Fore River Shipbuilding Co.		
Frederick Creecy Lamb,	B. S.,	El Paso, Texas.
City Chemist and Bacteriologist.		
Edwin Bentley Owen,	B. S.,	West Raleigh, N. C.
Registrar North Carolina College of Agriculture and Mechanic Arts.		
B. Moore Parker,	B. S.,	West Raleigh, N. C.
Assistant Professor of Carding and Spinning, North Carolina College of Agriculture and Mechanic Arts.		
Numa Reid Stansel,	B. S.,	Omaha, Neb.
Mechanical and Electrical Engineer Treasury Department.		
Teisaku Sugishita,	B. S.,	Kokufu, Japan.
Civil Engineer.		
George Frederick Syme,	B. S.,	Raleigh, N. C.
C. E. 1907. South and Western Railway, Church Hill, Tenn.		

CLASS OF 1899.

Wm. Davidson Alexander, Jr.,	B. S.,	High Point, N. C.
Superintendent of Public Works City of High Point.		
Ira Wilson Barber,	B. S.,	Mt. Airy, N. C.
Superintendent Electric Light and Power Plant and Water-works.		
John Henderson Birdsong,	B. S.,	Chicago, Ill.
Chief Chemist The National Malleable Castings Co.		
Francis Marion Foy,*	B. S.,	Scott's Hill, N. C.
Albert Sidney Lyon,	B. S.,	Rocky Mount, N. C.
Superintendent Public Works City of Rocky Mount.		
Carroll Lamb Mann,	B. S., C. E.,	West Raleigh, N. C.
Civil Engineer and Instructor in Civil Engineering N. C. College of Agriculture and Mechanic Arts.		
O'Kelly W. Myers,	B. S.,	Mantazilla, P. I.
Civil Service.		
Eugene Leroy Parker,	B. S.,	Mt. Pleasant, Tenn.
Analytical and Consulting Chemist E. L. Parker & Co.		
Eugene Gray Person,	B. S.,	Macon, Ga.
Bookkeeper Bibb Manufacturing Co.		

---

*Deceased.

Name. *Degree.* *Address.*

Frederick Erastus Sloan, B. S., Raleigh, N. C.
District Agent The Security Life and Annuity Co., of Greensboro, N. C.

Andrew Thomas Smith, B. S., Camden, N. J.
Draftsman in charge New York Shipbuilding Co.

Alexis Preston Steele, B. S., Statesville, N. C.
Mechanical Engineer J. C. Steele & Sons.

William Anderson Syme, B. S., Raleigh, N. C.
M. S. 1903. Ph. D. Johns Hopkins 1906. Assistant Chemist N. C. Experiment Station.

Hugh Ware, B. S., Birmingham, Ala.
Chemist Decatur Car Wheel and Manufacturing Co.

Claude B. Williams, B. S., Elizabeth City, N. C.
M. D. University College of Medicine 1903. Physician.

CLASS OF 1900.

Kemp Alexander, B. E., Lexington, N. C.
Superintendent Yadkin Knitting Mills Co.

Leslie Lyle Allen, B. E., Ensley, Ala.
Superintending construction Tennessee Coal, Iron and Railroad Co.

Robert Linn Bernhardt, B. S., Salisbury, N. C.
Bookkeeper Salisbury Hardwood and Furniture Co.

Leslie Graham Berry, B. E., 6th Ave., Des Moines, Iowa.
Contracting Engineer.

James Harry Bunn, B. E., Henderson, N. C.
Assistant Secretary Henderson Cotton Mill.

Samuel Merrill Hanff, B. S., Duke, N. C.
Episcopal Minister.

George Roland Harrell, B. S., Grasselli, N. J.
Manufacturing Foreman The Grasselli Chemical Co.

Henry Allen Huggins, B. S., Wilmington, N. C.
Bookkeeper George W. Huggins.

Garland Jones, Jr., B. S., Fort Worth, Texas.
Chemist Armour & Co.

Louis Henry Mann, B. E., Washington, N. C.
D. D. S. University of Maryland 1904. Dentist.

Robert Hall Morrison, B. E., Stanley, N. C.
President Mariposa Cotton Mills.

William Montgomery Person, B. E., Sparrow's Point, Md.
Superintendent of Coke Ovens.

Name.	*Degree.*	*Address.*	
Junius Edward Porter.	B. E..	Portsmouth. Va.	Assistant Engineer A. C. L. Railway Co. Home address, Emerson, N. C.
Roger Francis Richardson.	B. E..	Box 759, Ensley, Ala.	Construction Engineer Tennessee Coal, Iron and Railroad Co.
William Edwin Rose,	B. E.,	Newport News. Va.	Draftsman Newport News Steamship and Dry Dock Co.
Floyd De Ross,	B. E.,	W. Ave., Charlotte, N. C.	Traveling Salesman Fostoria Incandescent Lamp Co.
Ira Obed Schaub,	B. S.,	Ames, Iowa.	Assistant Professor of Soils Iowa Agricultural College.
John Wade Shore,	B. S.,	Boonville, N. C.	Teacher and Farmer.
William Turner Smith,	B. E.,	Dublin, Ga.	Secretary and Treasurer Georgia Hydraulic Stone Co.
Solomon Alexander Vest,	B. S. 1900, B. Agr. 1901,	Rocksdale, Tenn.	Analytical Chemist in employ of F. G. Smith, Propr. of Vest Laboratory.
Roscoe Marvin Wagstaff,	B. E.,	Newport News, Va.	Draftsman with Newport News Shipbuilding and Dry Dock Co.
Gaither Hall Whiting,*	B. S..	Richmond. Va.	Assistant Chemist Virginia-Carolina Chemical Co.

CLASS OF 1901.

Fletcher Hess Barnhardt,	B. E..	Phoenixville, Pa.	Structural Engineer with Phoenix Bridge Co.
William Osborne Bennett,	B. E..	Wadesboro, N. C.	Manager South Atlantic Oil Co.
Fred Wilhelm Bonitz,	B. E.,	Wilmington, N. C.	Attorney-at-Law.
Zolly Mosby Bowden,	B. E.,	Mulberry, Fla.	Electrician Prairie Pebble Phosphate Co.
Bedford Jethro Brown,	B. E.,	Charlotte, N. C.	Meter Expert Southern Power Co.
Paul Collins,	B. S.,	Nashville, Tenn.	Assistant Chemist L. P. Brown & Co.
William Pescud Craige,	B. S..	New Orleans, La.	With Peter F. Pescud, Underwriter.
William Lois Craven,	B. E.,	York, Pa.	Draftsman York Bridge Co.

---

*Deceased.

Name. *Degree.* *Address.*

Felix Gray Crutchfield, B. E., Winston-Salem, N. C.
Foreman Chatham Manufacturing Co.

George Maslin Davis, B. E., Winston-Salem, N. C.
Chief Draftsman Southbound Railway Co.; also General Manager Winston Tag Machine Co.

William Dollison Faucette, B. E., Portsmouth, Va.
Assistant Civil Engineer Seaboard Air Line Railway.

Benjamin Oliver Hood, B. E., Canonsburg, Pa.
Structural Draftsman Fort Pitt Bridge Works.

Martin Kellogg, B. Agr., Gatesville, N. C.
Register of Deeds of Gates County.

Jesse Julian Liles, B. E., Pittsburg, Pa.
Salesman General Electric Co.

Lewis Omer Lougee, B. E., Pittsburg, Pa.
Of the firm of George S. Baton & Co., Civil and Mining Engineers.

Charles Harden McQueen, B. E., Winston-Salem, N. C.
Civil Engineer with J. L. Ludlow, C. E.

William Franklin Pate, B. S., Wooster, Ohio.
Assistant Chemist Agricultural Experiment Station.

Edward Oscar Smith, B. E., Newport News, Va.
Special Draftsman Newport News Shipbuilding and Dry Dock Co.

Walter Stephen Sturgill, B. E., Fort D. A. Russell, Wyo.
First Lieutenant Second Field Artillery, United States Army.

Beverly Nathan Sullivan, B. S., Winston-Salem, N. C.
Superintendent Winston-Salem Light and Fuel Co.

Charles Augustus Watson, B. S., Atlanta, Ga.
With Berlin Aniline Works.

Benjamin Vaden Wright, B. E., Globe, Arizona.
Assistant Engineer G. V. G. & N. Railroad Co.

CLASS OF 1902.

William David Boseman, B. E., Rocky Mount, N. C.
Farmer.

Junius Sidney Cates, B. S., Washington, D. C.
M. Agr. 1904. U. S. Department of Agriculture.

Robert Baxter Cochran, B. E., Urbana, Ohio.
Electrical Engineer.

James Lumsden Ferebee, B. E., Wilmington, Del.
Assistant Engineer Water Department.

Name. *Degree.* *Address.*

Robert Irving Howard, B. E., Greenville, N. C.
Assistant Cashier The Bank of Greenville.

John Luther McKimmon, B. Agr., Laurinburg, N. C.
Farmer.

Laurie Moseley, B. E., Greensboro, N. C.
Southern Representative Owego Bridge Co.

Vassar Young Moss, B. E., Canonsburg, Pa.
Structural Draftsman Fort Pitt Bridge Works.

Charles Arthur Nichols, B. E., Muscogee, Indian Ter.
Merchant.

James Lafayette Parker, B. E., 116 Nassau St., New York.
Assistant Engineer H. C. Keith, Consulting Engineer.

William Benedict Reinhardt, B. E., Dawson, Y. T.
Electrician Dawson Electric Light and Power Co., Ltd.

Russell Elstner Snowden, B. E., Lynchburg, Va.
Assistant Civil Engineer Southern Railway, Lynchburg, Va.
Home address, Snowden, N. C.

Joseph Platt Turner, B. E., Spray, N. C.
Superintendent of Cotton Mill.

Cleveland Douglas Welch, B. E., Gastonia, N. C.
Luray Cotton Mills.

CLASS OF 1903.

William Morton Bogart, B. E., Charlotte, N. C.
Draftsman General Fire Extinguisher Co.

Leslie Norwood Boney, B. E., Wallace N. C.
Cashier Bank of Wallace.

John Samuel P. Carpenter, B. E., Cherryville, N. C.
Superintendent Cherryville Mfg. Co. and Melville Mfg. Co.

Walter Clark, Jr., B. E., Raleigh, N. C.
Lawyer.

John Eliot Coit, B. Agr., Tucson, Arizona.
Ph. D. Cornell University. Horticulturist Arizona Experiment Station.

Summey Crouse Cornwell, B. E., Dallas, N. C.
Civil Engineer in charge highway construction Gaston County.

Charles Lester Creech, B. S., New York City, N. Y.
Manager of New York Office of John W. Fries.

Eugene English Culbreth, B. E., Raleigh, N. C.
Bookkeeper E. M. Uzzell & Co., Printers.

Name.	*Degree.*	*Address.*
Walter Lee Darden,	B. E.,	Portsmouth, Va.
Draftsman Seaboard Air Line Railway, Portsmouth, Va.		
Junius Franklin Diggs,	B. S.,	Rockingham, N. C., R. 1.
Farmer and Merchant.		
Theophilus Thomas Ellis,	B. E.,	Henderson, N. C., R. 4.
Farmer.		
John Daniel Ferguson,	B. E.,	Monroe, N. C., R. 9.
Civil Engineer and Farmer.		
Hugh Pierce Foster,	B. E.,	Wilmington, N. C.
Assistant Chief Engineer Weed Distilling and Manufacturing Co.		
Oliver Max Gardner,	B. S.,	Shelby, N. C.
Lawyer.		
Lamar Carson Gidney,	B. E.,	Shelby, N. C.
John Howard Glenn,*	B. E.	
Emil Gunter,	B. E.,	Oshkosh, Wis.
Chief Engineer and Electrical Engineer Winnebago Traction Co.		
Eugene Colistus Johnson,	B. E.,	Ingold, N. C.
Sawmilling.		
James Matthew Kennedy,	B. E.,	Raleigh, N. C.
Architect.		
Bennett Land, Jr.,	B. E.,	Jacksonville, Fla.
Division Engineer Seaboard Air Line Railway.		
John Thomas Land,	B. E.,	Norfolk, Va.
Civil Engineer with E. C. Foreman and J. T. Land.		
Edmond Shaw Lytch,	B. E.,	Mulberry, Fla.
Electrical Engineer Prairie Pebble Phosphate Co.		
Jesse John Morris,	B. E.,	Norfolk, Va.
Civil Engineer Norfolk and Southern Railroad.		
David Starr Owen,	B. E.,	Fayetteville, N. C.
Superintendent Standard Turpentine Co., Plant No. 1.		
John Harvey Parker,	B. E.,	Savannah, Ga.
Manager Pepsi-Cola Co.		
Joel Powers,	B. E.,	Goldsboro, N. C.
Draftsman Dewey Bros.		
Edward Hays Ricks,	B. E.,	Philadelphia, Pa.
Salesman William Sellers & Co.		
Gaston Wilder Rogers,	B. E.,	Macon, Ga.
C. E. 1905. With F. S. Royster Guano Co.		

---

*Deceased.

Name. *Degree.* *Address.*

Charles Burdette Ross, B. E., W. Ave., Charlotte, N. C.
Contractor.

John Houston Shuford, B. S., West Raleigh, N. C.
Instructor in Dyeing N. C. College of Agriculture and Mechanic Arts.

Edward Roe Stamps, B. E., Macon, Ga.
Superintendent F. S. Royster Guano Co.

George Yates Stradley, B. E., Roanoke, Va.
Structural Draftsman Virginia Bridge and Iron Company.

Charles Edward Trotter, B. S., Baltimore, Md.
Medical Student Johns Hopkins University.

Jonathan Winborne White, B. S., State College, Pa.
Assistant Chemist and Instructor in Agricultural Chemistry.

Edwin Seymour Whiting,* B. E., Hamlet, N. C.

CLASS OF 1904.

Nelson Adams, B. E., McColl, S. C.
Farmer.

Haywood Lewis Alderman, B. E., Box 153, Panama, R. P.
Asst. Engineer of Ice and Electric Plant Panama-American Corporation.

Eugene Cleveland Bagwell, B. E., Hull, Fla.
Supt. and Chief Engineer Charlotte Harbor and Northern Railway.

Edward Par Bailey, B. E., Wilmington, N. C.
President Wilmington Iron Works.

James Claudius Barber, B. E., Barber, N. C.
Farmer.

William Walter Barber, B. E., Barber, N. C.
Farmer.

William Alexander Barrett, B. E., Missoula, Montana.
Chief Engineer Missoula Light and Power Co.

Timothy Eldridge, B. E., Anaconda, Montana.
Inspector Anaconda Copper Mining Co., Electrical Department.

James William Farrior, B. E., Schenectady, N. Y.
General Electric Company, Testing Department.

William Walter Finley, B. S., North Wilkesboro, N. C.
Farmer and Breeder of Registered Percheron Horses.

George Washington Foushee, B. E., Gibsonville, N. C.
Overseer of Spinning, Mineola Manufacturing Co.

Edgar William Gaither, B. S., Nashville, Tenn.
Manager L. P. Brown & Co.'s Chemical Laboratory.

---

*Deceased.

Name. *Degree.* *Address.*

Paul Stirewalt Grierson, B. E., Newport News, Va.
Electrician in employ of Charles Cory & Son, New York.

Joseph Perrin Gulley, Jr., B. E., Philadelphia, Pa.
Meterman Philadelphia Electric Light Co.

Jarvis Benjamin Harding, B. E., Nogales, Sonora, Mexico.
Locating Engineer in charge field party Southern Pacific Railway.
Home address, Greenville, N. C.

George Herbert Hodges, B. E., Scottdale, Pa.
Engineer H. C. Frick Coke Co.

Jesse McRae Howard, B. E., Concord, N. C.
Assistant Superintendent Gibson Manufacturing Co.

Branton Faison Huggins, B. E., Valdosta, Ga.
Member of firm of J. M. Youngblood & Co., Planing Mill.

Hill McIver Hunter, B. E., Greensboro, N. C.
Assistant Purchasing Agent Proximity Mfg. Co. and White Oak Mills.

William Kerr, B. S., West Raleigh, N. C.
Superintendent Experiment Farm.

Ernest Edwin Lincoln, B. E., Phoenixville, Pa.
Draftsman Phoenixville Bridge Co.

John Fairly McIntyre, B. E., Laurinburg, N. C.

James McKimmon, B. E., Raleigh, N. C.
Bookkeeper Raleigh Banking and Trust Co.

Joseph Alfred Miller, Jr., B. E., Brevard, N. C.
Secretary Miller-DeVane Supply Co.

William Field Morson, B. E., Raleigh, N. C.
Civil Engineer Greater Raleigh Land Co., Raleigh, N. C.

Leon Andrew Neal, B. E., Bristol, Tenn.
Assistant Engineer Virginia and Southwestern Railway Co.

William Joel Patton, B. E., Brevard, N. C.
Lumber Business.

Frederick Colwell Phelps, B. E., Fortress Monroe, Va.
Second Lieutenant United States Army.

William Walter Rankin, B. E., Charlotte, N. C.
Principal Shopton High School.

Risden Patterson Reece, B. E., Winston-Salem, N. C.
Assistant Mechanical Engineer Salem Iron Works.

William Richardson, Jr., B. E., Scottdale, Pa.
Draftsman H. C. Frick Coke Co.

James Clarence Temple, B. S., West Raleigh, N. C.
Assistant Bacteriologist and Chemist N. C. Experiment Station.

Name. *Degree.* *Address.*

JOSEPH KENDALL WAITT, B. E., Portsmouth, Va.
Civil Engineer.

MARION EMERSON WEEKS, B. E., Portsmouth, Va.
Draftsman Equipment Department Norfolk Navy Yard.

ALBERT CLINTON WHARTON, JR., B. S., Clemmonsville, N. C.
Farmer.

CLASS OF 1905.

LEON FRANKLIN ABERNETHY, B. Agr., Hickory, N. C.
With The Abernethy Hardware Co.

ROBERT JAMES AVERY, B. Agr., Morganton, N. C.

OSCAR LUTHER BAGLEY, B. S., Weldon, N. C.
Manager Coca-Cola Bottling Works.

BENJAMIN ALEXANDER BROOM, B. E., Milwaukee, Wis.
Erecting Engineer (Steam Turbine) Allis-Chalmers Co.

JOEL W. BULLOCK, B. Agr., Whigham, Ga., R. 4.
Bullock Bros., Tobacco Growers.

HENRY BROZIER CARTWRIGHT, B. E., Raleigh, N. C.
Civil Engineer Seaboard Air Line Railway, Raleigh, N. C.

WILLIAM MILLER CHAMBERS, B. E., Hotchkiss, W. Va.
Pay-roll Clerk W. M. Ritter Lumber Co.

WALTER GOSS FINCH, B. E., Washington, D. C.
Civil Engineer United States Government.

STERLING GRAYDON, B. E., Charlotte, N. C.
Engineer D. A. Tompkins Co.

JARVIS BENJAMIN HARDING, B. E., Nogales, Sonora, Mexico.
Locating Engineer in charge of field party Southern Pacific Railway.
Home address, Greenville, N. C.

RICHARD HUGH HARPER, B. S., Patterson, N. C.
Gwyn-Harper Manufacturing Co.

JERE ISAAC HERRITAGE, B. E., Jacksonville, N. C.
Surveying timber land J. C. Foster and R. C. Remick.

LABAN MILES HOFFMAN, JR., B. E., Dallas, N. C.
With Monarch Cotton Mills Co.

FLOYD RAINEY HUNT, B. E., Great Falls, S. C.
Electrical Engineer Southern Power Co.

ARTHUR TEMPLETON KENYON, B. E., Clinton, N. C.
Engineer Panama Canal. Home address, Clinton, N. C.

<table>
<tr><th>Name.</th><th>Degree.</th><th>Address.</th></tr>
<tr><td>Wm. Franklin Kirkpatrick,</td><td>B. E. 1904, B. Agr.,</td><td>Kingston, R. I.</td></tr>
<tr><td colspan="3">Agent in Turkey Investigation U. S. Department of Agriculture, Bureau of Animal Industry.</td></tr>
<tr><td>Starr Neely Knox,</td><td>B. E.,</td><td>Charlotte N. C.</td></tr>
<tr><td colspan="3">Assistant Engineer Southern Railway.</td></tr>
<tr><td>James Herritage Koonce,</td><td>B. E.,</td><td>Richlands, N. C.</td></tr>
<tr><td colspan="3">Civil Engineer U. S. Government. Home address, Richlands, N. C.</td></tr>
<tr><td>Henry Marvin Lilly,</td><td>B. E.,</td><td>Wilmington, N. C.</td></tr>
<tr><td colspan="3">Civil Engineer and member of firm of Field & Lilly, Architects and Engineers.</td></tr>
<tr><td>Lipscombe Goodwin Lykes,</td><td>B. E.,</td><td>Habana, Cuba.</td></tr>
<tr><td colspan="3">With Lykes Bros.</td></tr>
<tr><td>George Green Lynch, Jr.,</td><td>B. E.,</td><td>Wilmington, N. C.</td></tr>
<tr><td>Malcolm Roland McGirt,</td><td>B. Agr.,</td><td>Winston-Salem, N. C.</td></tr>
<tr><td colspan="3">Manager West End Dairy.</td></tr>
<tr><td>Walter Hoge McIntire,</td><td>B. S.,</td><td>State College, Pa.</td></tr>
<tr><td colspan="3">Assistant Chemist Institute of Animal Nutrition.</td></tr>
<tr><td>James Oscar Morgan,</td><td>B. Agr.,</td><td>Ithaca, N. Y.</td></tr>
<tr><td colspan="3">Graduate Student in Agronomy. Assistant in Experimental Agronomy Cornell University.</td></tr>
<tr><td>Lindsay Alexander Murr,</td><td>B. E.,</td><td>Jacksonville, Fla.</td></tr>
<tr><td colspan="3">Assistant Engineer Seaboard Air Line Railway.</td></tr>
<tr><td>Garland Perry Myatt,</td><td>B. S.,</td><td>Bayonne, N. J.</td></tr>
<tr><td colspan="3">Chemist General Chemical Co.</td></tr>
<tr><td>John Alsey Park,</td><td>B. E.,</td><td>Raleigh, N. C.</td></tr>
<tr><td colspan="3">Instructor in Mathematics N. C. College of Agr. and Mechanic Arts.</td></tr>
<tr><td>James Hicks Peirce,</td><td>B. S.,</td><td>Warsaw, N. C.</td></tr>
<tr><td colspan="3">Wholesale Lumber Business.</td></tr>
<tr><td>Pleasant H. Poindexter, Jr.,</td><td>B. Agr.,</td><td>Donoha, N. C.</td></tr>
<tr><td colspan="3">Farmer.</td></tr>
<tr><td>Edward Griffith Porter,</td><td>B. E.,</td><td>Goldsboro, N. C.</td></tr>
<tr><td colspan="3">Sales Agent Punch-I-Nello Co.</td></tr>
<tr><td>Robert Walter Scott, Jr.,</td><td>B. Agr.,</td><td>Rocky Mount, N. C.</td></tr>
<tr><td colspan="3">Supt. of Edgecombe Test Farm, N. C. Agricultural Department.</td></tr>
<tr><td>Jonathan Rhodes Smith,</td><td>B. E.,</td><td>Phoenixville, Pa.</td></tr>
<tr><td colspan="3">Structural Draftsman The Phoenix Bridge Co.</td></tr>
<tr><td>John Davidson Spinks,</td><td>B. E.,</td><td>Hull, Fla.</td></tr>
<tr><td colspan="3">Assistant Engineer Charlotte Harbor and Northern Railway.</td></tr>
<tr><td>Ervin Blakeney Stack,</td><td>B. E.,</td><td>Monroe, N. C.</td></tr>
<tr><td colspan="3">Electrical Engineer General Electric Co.</td></tr>
</table>

Name. *Degree.* *Address.*

SYLVESTER MURRAY VIELE, B. E., Altoona, Pa.
Draftsman Electrical Department Pennsylvania Railroad Co.

WALTER JENNINGS WALKER, B. E., Schenectady, N. Y.
General Electric Co.

STEVEN DOCKERY WALL,* B. E., Rockingham, N. C.

WALTER WELLINGTON WATT, JR., B. E., Charlotte, N. C.
Draftsman Saco & Pettee Machine Shops.

ARCHIE CARRAWAY WILKINSON, B. E., Waynesville, N. C.
Locating Engineer Shoolbred & Seaver, Civil Engineers.

CLASS OF 1906.

DURANT STEWART ABERNETHY, B. E., Lynchburg, Va.
Civil Engineer Southern Railway. Home address, Hickory, N. C.

GEORGE GILDEROY ALLEN, B. E., Raleigh, N. C.
Second Hand in Carding, Neuse River Cotton Mill.

GEORGE PAGE ASBURY, B. E., Raleigh, N. C.
Civil Engineer Norfolk and Southern Ry. Home address, Burkmont, N. C.

JAMES CLAUDIUS BEAVERS, B. Agr., Washington, D. C.
Department of Agriculture.

NEEDHAM ERIC BELL, B. S., Auburn, Ala.
Assistant Chemist Agricultural Experiment Station.

KENNETH LEON BLACK, B. E., Richmond, Va.
With I. J. Smith Co., Contractors.

WILLIAM ANDREWS BUYS, B. E., Belhaven, N. C.
Civil Engineer for Cooperage Lumber Co.

MARK HOPKINS CHESBRO, B. Agr., Claremont, Va.
Farmer.

CONNOR CALHOUN CLARDY, B. E., Schenectady, N. Y.
General Electric Co.

JOHN WASHINGTON CLARK, B. E., Philadelphia, Pa.
B. E. 1907. Student Philadelphia Textile School.

JAMES DUNCAN CLARK, B. S., Tampa, Fla.
Carbonic Acid Manufacturer.

SAMUEL HERBERT CLARKE, B. E., Statesville, N. C.
Civil Engineer.

WILEY THEODORE CLAY, B. E., West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.

---

*Deceased.

Name. *Degree.* *Address.*

Duncan Archibald Cox, B. S., Ensley, Ala.
Assistant Chemist Tennessee Coal, Iron and Railway Co.

Alexander Doane Cromartie, B. Agr., Garland, N. C.
Farmer.

Latta Vanderion Edwards, B. E., Ithaca, N. Y.
Instructor in Civil Engineering Cornell University.

Weldon Thompson Ellis, B. E., West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.

Albert Edward Escott, B. E., Raleigh, N. C.
Secretary Raleigh Cotton Mills and Neuse River Mills.

William Carlyle Etheridge, B. Agr., West Raleigh, N. C.
Assistant in Farm Crops, N. C. Experiment Station.

James Beckett Ewart, B. E., New York City, N. Y.
Engineer in Experimental Laboratory Western Electric Co.

Shirly Watson Foster, B. Agr., Washington, D. C.
Agent and Expert in The Bureau of Entomology, U. S. Dept. of Agr.

Arthur Wynns Gregory, B. S., Urbana, Ill.
Assistant in Agricultural Chemistry University of Illinois.

Horace Lester Hamilton, B. E., Schenectady, N. Y.
Employee of General Electric Co.

John Frederick Hanselman, B. E., Richmond, Va.
With Morrison Machinery and Supply Co.

Clarence Wilson Hewlett, B. E., West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.

James Allan Higgs, Jr., B. E., Knoxville, Tenn.
Civil Engineer Southern Railway.

William Graham Knox, B. E., Stockertown, Pa.
Assistant Chemist Northampton Portland Cement Co.

Joe Poindexter Lovill, B. E., Elkin, N. C.
Engineer Elkin and Alleghany Railroad, Elkin, N. C.

Thompson Mayo Lykes, B. E., Tampa, Fla.
With Lykes Bros.. Cattle Dealers.

Horace Smith McLendon, B. Agr., Wadesboro, N. C., R. 1.
Farmer.

Raymond Maxwell, B. E., Swan Quarter, N. C.
Chief Engineer Mattamuskeet Railroad.

Lacy Moore, B. E., Graham, N. C.
Civil Engineer Southern Railway, Lynchburg, Va.
Home address, Graham, N. C.

Joseph Graham Morrison, B. Agr., Stanley, N. C.
Of firm of J. G. & R. H. Morrison, Merchants.

Name.	*Degree.*	*Address.*	
Jesse Clarence Myrick,	B. E.,	Wilmington, N. C.	Consolidated Railways, Light and Power Co.
Charles Franklin Niven,	B. Agr.,	Ithaca, N. Y.	Student at Cornell University.
Lola Alexander Niven,	B. Agr.,	Ithaca, N. Y.	Student at Cornell University.
Lewis Milton Oden,	B. Agr.,	Raleigh, N. C.	Dairyman.
Thomas Jefferson Ogburn, Jr.,	B. E.,	Richmond, Va.	Monotype and Linotype Machinist Everett Waddey Co.
Clyde Ester Parker,	B. S.,	Raleigh, N. C.	Cotton Merchant, Parker Bros. & Co.
Samuel Oscar Perkins,	B. S.,	Raleigh, N. C.	Assistant Chemist N. C. Department of Agriculture.
Angelo Bettlena Piver,	B. E.,	Phoenixville, Pa.	Draftsman Phoenix Bridge Co.
William Crawford Piver,	B. S.,	New York, N. Y.	Analytical Chemist.
Durant Waite Robertson,	B. E.,	Washington, D. C.	Traveling Salesman American Tobacco Co.
Freddie Jackson Talton,	B. Agr.,	Pikeville, N. C., R. 2.	Poultry Farming.
Richard Henry Tillman,	B. E.,	Schenectady, N. Y.	Testing Department General Electric Co.
William Sidney Tomlinson,	B. E.,	Lumberton, N. C.	City Engineer.
Reid Tull,	B. E.,	Elise, N. C.	Civil Engineer Durham and Charlotte Railway.
Jackson Corpening Tuttle,	B. E.,	Schenectady, N. Y.	Testing Department General Electric Co.
Robert Peele Uzzell,	B. Agr.,	Goldsboro, N. C.	Farming.
Peter Valaer, Jr.,	B. S.,	Washington, D. C.	Assistant Chemist Bureau of Internal Revenue.
Lillian Lee Vaughan,	B. E.,	West Raleigh, N. C.	Instructor N. C. College of Agriculture and Mechanic Arts.
John Harleigh Williams,	B. E.,	Spencer, N. C.	Assistant Y. M. C. A. Secretary Southern Railway.
Lewis Taylor Winston,	B. Agr.,	Asheville, N. C.	Estimator Forest Department Biltmore Estate.

CLASS OF 1907.

Name. *Degree.* *Address.*

Herbert Scandlin Battie, B. E., Pittsburg, Pa.
McClintic-Marshall Construction Co. Home address, Greensboro, N. C.

Joe Pittman Bivens, B. E., Richmond, Va.
Testing Department Richmond Light and Power Co.

Carney John Bryan, B. E., Morton Park, Ill.
Western Electric Co.

Lindsay Ferguson Carleton, B. E., North Wilkesboro, N. C.
Superintendent North Wilkesboro Light and Power Co.

Robert Hill Carter, B. E., Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.

John Washington Clark, B. E., Philadelphia, Pa.
Student in Philadelphia Textile School.

Jacob Tatum Eaton, B. Agr., Farmington, N. C.
Assistant in Dairying, United States Government.

Seba Eldridge, B. E., New York City, N. Y.
Student Columbia University.

Benjamin Bryan Everett, B. Agr., Palmyra, N. C.
Farming.

John Lindsay Ferguson, B. E., Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.

Elias Van Buren Fowler, B. E., Schenectady, N. Y.
General Electric Co.

Clement Leinster Garner, B. E., Washington, D. C.
United States Coast Survey.

Lovic Rodgers Gilbert, B. E., Jonesboro, N. C.
Cotton Mill Superintendent Clark Manufacturing Co.

Roy Joseph Gill, B. E., Manila, P. I.
Civil Service.

Robert Strickler Graves, B. E., Schenectady, N. Y.
With General Electric Co.

George Rom Hardesty, B. E., Raleigh, N. C.
Central Hospital, in charge of repairs.

Philip William Hardie, B. E., Charleston, S. C.
Civil Engineer United States Navy Department.

Jokton Lafayette Hemphill, B. E., Schenectady, N. Y.
With General Electric Co.

Lawrence James Herring, B. Agr., Kansas City, Mo.
At Kansas City Veterinary College. Home address, Clinton, N. C.

Name.	*Degree.*	*Address.*	
Guy Francis Hinshaw,	B. E.,	Winston-Salem, N. C.	With City Engineer.
William Norman Holt,	B. E.,	Smithfield, N. C.	Cotton Manufacturing.
Albert Carl Jones,	B. Agr.,	Kansas City, Mo.	At Kansas City Veterinary College.
William Whitmore Jones,	B. E.,	Franklin, N. C.	Laundry and Electrical Work.
Lafayette Franck Koonce,	B. Agr.,	Kansas City, Mo.	At Kansas City Veterinary College.
Louis Edgar Lougee,	B. S.,	Pittsburg, Pa.	Jones & Laughlin Steel Co.
Henry Kreiger McConnell,	B. S.,	West Nashville, Tenn.	Chemist Federal Chemical Co.
Oscar Franklin McNairy,	B. E.,	Greensboro, N. C.	Civil Engineer.
Eugene Franklin Meador,	B. E.,	Reidsville, N. C.	Farmer.
Bennett Taylor Mial,	B. E.,	Wilkinsburg, Pa.	Asst. to Foreman McClintic-Marshall Construction Co. Travels.
Frank Curtis Michael,	B. E.,	Richmond, Va.	Has charge of switchboard Virginia Passenger and Power Co.
John Maple Mills,	B. E.,	Raleigh, N. C.	Raleigh and Southport Railway.
Henry Starbuck Montague,	B. S.,	Richmond, Va.	Assistant Chemist Virginia-Carolina Chemical Co.
John Lightfoot Morson,	B. E.,	Raleigh, N. C.	Engineer for Greater Raleigh Land Co.
James Elwood Overton,	B. Agr.,	Ahoskie, N. C.	Farmer.
Thomas Franklin Parker,	B. Agr.,	West Raleigh, N. C.	Graduate Student A. & M. College.
Fred Maynard Parks,	B. E.,	Pittsburg, Pa.	Westinghouse Electric and Manufacturing Co.
Arthur Lee Paschal,	B. Agr.,	Vaughan, N. C.	Farmer.
Guy Pinner,	B. E.,	Phoenixville, Pa.	Draftsman The Phoenix Bridge Co.
Winslow Gerald Pitman,	B. E.,	Cumberland, Md.	McClintic-Marshall Construction Co., Pittsburg, Pa.

Name.	*Degree.*	*Address.*
James Kemp Plummer,	B. S.,	Rockdale, Tenn.
Chemist Rockdale Iron Co.		
Leon Jacob Schwab,	B. E.,	Goldsboro, N. C.
Civil Engineer.		
John Oscar Shuford,	B. E.,	Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.		
Vance Sykes,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
Luther Russell Tillett,	B. E.,	Jacksonville, Fla.
Florida East Coast Railroad. Home address, Carolla, N. C.		
William Brooks Truitt,	B. E.,	Greensboro, N. C.
Draftsman Greensboro Boiler and Machine Co.		
John Ed. Turlington,	B. Agr.,	Lynchburg, Va.
U. S. Department of Agriculture, Bureau of Animal Industry.		
Edmund Farriss Ward,	B. Agr.,	Lumberton, N. C.
Lawyer.		
Lindsey Marade Weaver,	B. E.,	Lexington, N. C.
Farmer.		
John Jackson Wells,	B. E.,	Rocky Mount, N. C.
Civil Engineer and Surveyor.		
David Lyndon White,	B. Agr.,	Pine Bluff, N. C.
Farm Superintendent Mrs. R. G. S. MacNeille.		
Cecil Bernard Whitehurst,	B. E.,	Morton Park, Ill.
Student Western Electric Co.		
Arthur John Wilson,	B. S.,	West Raleigh, N. C.
Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.		

THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS,

WEST RALEIGH.

1908-1909.

OCTOBER 3, 1889.

RALEIGH:
E. M. UZZELL & CO., STATE PRINTERS AND BINDERS.
1909.

CALENDAR.

1909.

JANUARY.

S.	M.	T.	W.	T.	F.	S.
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COLLEGE CALENDAR.

1909.

Thursday,	July	8,	Entrance examination at each county courthouse, 10 A. M.
Wednesday,	September	1,	Entrance examination at the College, 9 A. M.
Thursday,	September	2,	First Term begins; Registration Day.
Thursday,	November	25,	Thanksgiving Day.
Wednesday,	December	22,	First Term ends.

1910.

Wednesday,	January	5,	Second Term begins; Registration Day.
Saturday,	March	19,	Second Term ends.
Monday,	March	21,	Third Term begins.
Sunday,	May	29,	Baccalaureate Sermon.
Monday,	May	30,	Alumni Day. Annual Oration.
Tuesday,	May	31,	Commencement Day.

BOARD OF TRUSTEES.

Name.	*Post Office.*	*Term Expires.*
C. W. Gold	Raleigh	May 1, 1911.
E. M. Koonce	Jacksonville	May 1, 1911.
T. W. Blount	Roper	May 1, 1911.
D. A. Tompkins	Charlotte	May 1, 1911.
J. T. Ellington	Smithfield	May 1, 1913.
W. E. Daniel	Weldon	May 1, 1913.
W. H. Ragan	High Point	May 1, 1913.
W. B. Cooper	Wilmington	May 1, 1913.
M. B. Stickley	Concord	May 1, 1915.
T. T. Ballenger	Tryon	May 1, 1915.
N. B. Broughton	Raleigh	May 1, 1915.
O. L. Clark	Clarkton	May 1, 1915.
Everett Thompson	Elizabeth City	May 1, 1917.
R. H. Ricks	Rocky Mount	May 1, 1917.
O. Max Gardner	Shelby	May 1, 1917.
Locke Craig	Asheville	May 1, 1917.

FACULTY.

DANIEL HARVEY HILL, A.M., Lit.D., President.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Vice President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.

ROBERT E. LEE YATES, A.M., Professor of Mathematics.

THOMAS NELSON, Professor of Textile Industry.

JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.

CLIFFORD LEWIS NEWMAN, M.S., Professor of Agriculture.

JOHN MICHELS, B.S.A., M.S., Professor of Dairying and Animal Husbandry.

WILLIAM HAND BROWNE, Jr., A.B., Professor of Physics and Electrical Engineering.

HOWARD ERNEST SATTERFIELD, B.S. in M.E., Professor of Mechanical Engineering.

THOMAS PERRIN HARRISON, Ph.D., Professor of English.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Professor of Veterinary Science and Physiology.

HENRY C. WALTER, B.S., Acting Professor of Physics and Electrical Engineering.

FRANK C. REIMER, M.S., Associate Professor of Horticulture.

BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

WILLIAM ANDERSON SYME, B.S., M.S., Ph.D., Assistant Professor of Chemistry.

CHARLES BENJAMIN PARK, Instructor in Machine Shop and Assistant in Power Plant.

CARROLL LAMB MANN, B.S., C.E., Instructor in Civil Engineering.

GEORGE SUMMEY, Jr., Ph.D., Instructor in English.

CLARENCE ANDREW SPRAGUE, B.S.. Instructor in Physics.

ALFRED HENRY THIESSEN, B.S., Section Director United States Weather Bureau, Instructor in Meteorology.

JOHN STRAUCHON JEFFREY, Instructor in Poultry Husbandry.

ABRAHAM RUDY, A.M., Pd.D., Instructor in Modern Languages.

RALPH INGRAM SMITH, B.S., Instructor in Zoology and Entomology.

WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.

JOHN ALSEY PARK, B.E., Instructor in Mathematics.

MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.

LILLIAN LEE VAUGHAN, B.E., Instructor in Drawing and Mechanics.

CARL PHILIP BONN, B.A., Instructor in English.

VANCE SYKES, B.E., Instructor in Mathematics and Civil Engineering.

WELDON THOMPSON ELLIS, B.E., M.E., Instructor in Machine Design and Steam Laboratory.

LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D., Instructor in Chemistry.

JOHN WORTHINGTON DORSEY, E.E., Instructor in Electrical Engineering.

JOHN EDWARD HALSTEAD, B.S.. Instructor in Dyeing.

HUBERT HILL, B.S., M.S., Instructor in Chemistry.

WILLIAM BROOKS TRUITT, B.E., Instructor in Physics.

JOHN LAWRENCE VON GLAHN, B.E., Instructor in Mathematics and Civil Engineering.

JESSE PAGE SPOON, B.Agr., Laboratory Assistant in Anatomy and Physiology.

JOHN GALENTINE HALL, A.M., Instructor in Biology.

PERCY LEIGH GAINEY, B.Agr., Assistant in Bacteriology.

HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.

FRED BARNET WHEELER, Instructor in Forge.

OTHER OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar.

ARTHUR FINN BOWEN, Bursar.

BENJAMIN SMITH SKINNER, Farm Superintendent.

JAMES OLIVER LOFTIN, Steward.

Miss ELSIE LANIER STOCKARD, Librarian.

Mrs. DAISY LEWIS, Hospital Matron.

Miss ISABELLA WILLIS PESCUD, Stenographer.

HENRY McKEE TUCKER, M.D., Physician.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION DEPARTMENT, WEST RALEIGH.

DANIEL HARVEY HILL, A.M., Lit.D., President.

CHARLES BURGESS WILLIAMS, M.S., Director and Agronomist.

WILLIAM ALPHONSO WITHERS, A.M., Chemist.

FRANK LINCOLN STEVENS, Ph.D., Vegetable Pathologist.

JOHN STRAUCHON JEFFREY, Poultryman.

FRANK CHARLES REIMER, M.S., Horticulturist.

ROBERT SETH CURTIS, B.S.A., Animal Husbandman.

JOHN MICHELS, M.S.A., Dairy Husbandman.

RALPH INGRAM SMITH, B.S., Entomologist.

GUY ALEXANDER ROBERTS, D.V.S., Veterinarian.

WILLIAM ANDERSON SYME, Ph.D., Assistant Chemist.

JOHN GALENTINE HALL, A.M., Assistant in Plant Diseases.

WILLIAM CARLYLE ETHERIDGE, B.Agr., Assistant in Farm Crops.

JAMES KEMP PLUMMER, B.S., Assistant Chemist.

PERCY LEIGH GAINEY, B.Agr., Assistant Bacteriologist.

A. R. RUSSELL, Assistant in Field Experiments.

ARTHUR FINN BOWEN, Bursar.

CRAVEN PEARCE FRANKLIN, Secretary and Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

First Lieutenant JOHN S. E. YOUNG, U. S. Army.

Cadet Major.

H. N. SUMNER.

Battalion Staff.

T. M. CLARK, Captain and Adjutant.
W. F. MORRIS, Captain and Quartermaster.

Noncommissioned Staff.

S. H. McNEELY, Sergeant Major.
T. D. HARRIS, Color Sergeant.

Band.

T. F. HAYWOOD, Captain.
W. R. MARSHALL, First Lieutenant.
J. H. ROBERTSON, Second Lieutenant.
R. J. WYATT, Drum Major.
W. E. DAVIS, First Sergeant.
I. N. TULL, Sergeant.
C. E. WALTON, Sergeant.
W. R. PHILLIPS, Sergeant.
O. M. SIGMON, Corporal.
J. W. ROLLINSON, Corporal.
G. R. ROSS, Corporal.
L. E. STEERE, Corporal.
R. T. WADE, Corporal.

Company A.

J. W. HARRELSON, Captain.
J. E. LATHAM, First Lieutenant.
W. N. SLOAN, Second Lieutenant.
H. S. STEELE, Second Lieutenant.
T. B. SUMMERLIN, First Sergeant.
J. C. ALBRIGHT, Sergeant.
H. C. CLAY, Sergeant.
W. L. MANNING, Sergeant.
L. D. MOODY, Sergeant.
W. H. DAVIS, Corporal.
J. L. MARTIN, Corporal.
K. BRYAN, Corporal.
W. P. THURSTON, Corporal.
F. T. PEDEN, Corporal.
W. J. HALL, Corporal.

Company B.

R. A. SHOPE, Captain.
W. S. DEAN, First Lieutenant.
W. M. MILLNER, Second Lieutenant.
R. R. FAISON, Second Lieutenant.
J. F. ROBINSON, First Sergeant.
J. B. PARKS, Sergeant.
L. L. HOOD, Sergeant.
T. S. BOND, Sergeant.
M. S. MAYES, Sergeant.
J. L. SPRINGS, Sergeant.
N. R. MARTIN, Corporal.
E. JOHNSTON, Corporal.
J. P. QUINERLY, Corporal.
G. W. GILLETTE, Corporal.
T. W. THORNE, Corporal.
F. G. TUCKER, Corporal.

Company C.

J. M. PRICE, Captain.
J. W. IVEY, First Lieutenant.
J. B. CRAVEN, Second Lieutenant.
J. E. TOOMER, Second Lieutenant.
L. P. McLENDON, First Sergeant.
R. L. MORGAN, Sergeant.
R. E. GILL, Sergeant.
T. H. THOMPSON, Sergeant.
H. W. WELLES, Sergeant.
W. M. NEALE, Sergeant.
W. BAILEY, Corporal.
J. M. BEAL, Corporal.
R. S. FAIRLY, Corporal.
M. F. WYATT, Corporal.

Company D.

W. A. HORNADAY, Captain.
J. G. PASCHAL, First Lieutenant.
J. M. PARKER, Second Lieutenant.
C. R. JORDAN, First Sergeant.
E. L. WINSLOW, Sergeant.
E. A. SEIDENSPINNER, Sergeant.
R. BOWDITCH, Sergeant.
C. R. BRADLEY, Sergeant.
J. W. BUCHANAN, Corporal.
R. BOYLAN, Corporal.
R. L. MORRISON, Corporal.
S. B. PHIFER, Corporal.

NOTE.—On October 14, 1908, the Battalion held a competitive drill on the Fair Grounds track, during the State Fair, and Company C, Corps of Cadets, was selected as the best drilled organization and awarded the College pennant.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890 and the "Nelson Act" of 1907 and by State appropriations.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and eighty-five acres of land. Fourteen hundred young trees and nine hundred and forty vines are growing in an orchard of sixteen acres. Seven acres are devoted to truck growing. The herd consists of thirty-eight cows, twenty-seven calves, and two pure-bred Jersey bulls. The laboratories, drawing-rooms, and workshops are well equipped for practical work.

BUILDINGS.

The Administration Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation-rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall was named in honor of the late R. Stanhope Pullen, the greatest benefactor of the College. The basement of this building is used as a dining room and seats five hundred students. The first story is used for library, reading room and lecture rooms. The second story serves as the College auditorium. This building is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is two hundred and four by seventy-four feet. The lower or basement floor contains the class rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making, stock judging, farm butchering, and cold-storage accommodations for the products.

The second floor contains the offices of the department, class rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery.

On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class rooms and large, well-lighted laboratories.

The building affords excellent accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

The Electric Laboratory is a one-story brick building. It is equipped with modern electrical apparatus to which large additions will be made.

Watauga Hall is a three-story brick building, trimmed with brownstone and containing sixty rooms for dormitories. There is also a large dormitory in the attic, and in the basement are bath-rooms, which are free for students' use.

Dormitories.—In addition to Watauga Hall, one three-story and three two-story brick buildings are used exclusively for dormitories.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated by steam. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

Foundry.—The old boiler house has been fitted up for foundry purposes. It contains a 36-inch cupola furnace, Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven; benches and hand tools for moulding in the course of exercises, as well as for any repair work for the College.

The Barn is a frame building carefully planned for the purposes to which it is devoted. The barn is fifty by seventy-two feet and three stories high.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

The New Power Plant furnishes heat, light, and power for all the buildings. The boiler plant consists of two 75-horse-power Babcock and Wilcox Company and two 100-horse-power Atlas Water-Tube Boilers, with a working steam pressure of 150 pounds. The Engine Plant consists of a 100-horse-power Skinner Engine and Crocker-Wheeler Generator attached; a 100 K. W. De Laval Turbine Generator set with self-exciter; a 10 K. W. steam-driven Exciter Set, Steam, and Vacuum Pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren Webster system of heating.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the

General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the Agricultural Building and the laboratories are in the main building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in any line of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock-raisers, fruit-growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Architecture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week or month.

Students cannot properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette-smoking, drinking, gambling, card-playing, visiting pool-rooms and all improper places, loafing on the streets, and other like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; his failure to perform duty and his infractions of the rules. When this record shows that a young man is not in College for the purpose of getting an education, and is not using his opportunities properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed. The rules of the College are intended solely to promote manliness, to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

PRIZES.

A first prize of ten dollars and a second prize of five dollars are awarded annually to the students in the Freshman Class who earn the largest and the next largest amounts of money by labor on the College farm.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

To the Junior Mechanical Student who has made the most progress in Mechanical Drawing the Mechanical Department gives a set of high-grade drawing instruments.

Mr. William Dunn, of New Bern, North Carolina, gives annually a twenty-five-dollar gold medal to the Senior speaker who makes the best oration on Commencement Day.

DISCIPLINE.

The discipline is intended to secure studious habits, with punctuality, system, and order in the performance of all duties. Every effort is made to develop strong, intelligent, high-toned men; and proper patience, forbearance, and sympathy are used in this great work; but the College is in no sense a reform school, and it will not retain young men who are vicious, idle, or incompetent.

HAZING.

There has been no hazing of any sort in College this year. The present sentiment of the student body is opposed to this practice in our College, and its management feels sure that there will be no hazing during the next year.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself or to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization of the students, and is entirely under student management. A general secretary is employed by the association and devotes his entire time to the work. The members of the Faculty and the Board of Trustees are interested in the work and give assistance, both financially and otherwise. Any student who is a member of an evangelical church may become an active member. Any student of good moral character or who desires to improve his moral life may become an associate member.

The College Association is a branch of the International Association.

Two regular meetings of the association are held each week: one on Sunday evening and one on Wednesday. Musicians and speakers from Raleigh and other cities frequently take part in these services.

The purpose of the association is fourfold:

First, to build up Christian character and offer a suitable field for its development.

Second, to aid in keeping up the moral life of all the students in College.

Third, to train men in definite methods of Christian work, that they may be of the greatest service to their College and subsequently to their church and their country.

Fourth, to give moral young men such amusements and such good-fellowship as they need.

Bible study is systematically taken up by the association. Six or ten men are grouped into classes and meet regularly for Bible study. The leaders of these classes are trained for their teaching, and the entire work is under the supervision of the Bible Study Committee and the general secretary. Every student in College is urged to join one of these classes.

The association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership dues. Although membership is voluntary, it is desired that all students should apply for membership and thereby aid and be aided in an upright College life.

Plans are now under consideration for a fifteen-thousand dollar building to be fitted with every convenience for the association. This building will be the social center of College life. It will contain halls for the literary societies and for the Athletic Association as well as most comfortable quarters for the association.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty it promotes practice in base-ball, foot-ball, track athletics, etc.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about six thousand volumes. There are also reference libraries in the different departments. The library is kept open from 9 A. M. to 6 P. M. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about ten thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical agricultural problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, *ex tempore* speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every two weeks for the discussion of mechanical subjects.

The Berzelius Chemical Society meets fortnightly for the discussion of chemical subjects and for review of the current chemical literature, with which the College is well supplied.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the same examination as for the two-year course.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each courthouse in the State at 10 o'clock A. M. the second Thursday in July of each year. The date for 1909 is July 8th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or if there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock A. M. on Wednesday preceding the opening day. The examinations begin with English at 9 A. M., in Room 21, Main Building, followed by Mathematics at 11, and History at 2, in the same room. The date for 1909 is September 1st.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.
2. School teachers holding teachers' certificates.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00.

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies is a matter largely to be determined by the parent.

The amount of such allowance should be kept within reasonable bounds. From $50.00 to $100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship, amount to from $275.00 to $325.00 for the entire session; or $230.00 to $280.00, if he has a scholarship.

The largest payment is made in September. A student on entering college should bring at least $60.00 to meet his various payments for the first month.

Students withdrawing from college within two weeks from date of entrance will be refunded all money paid by them to the College Bursar, except charges for board during the time here. Students withdrawing later than two weeks from date of entrance will be refunded no money except for board.

Board is $10.00 per month and is payable on the first day of each month from September to May inclusive; board for less time than one month is charged for at the rate of fifty cents a day or $3.00 per week.

The College Bursar is forbidden by the Trustees to give credit.

A more detailed statement of college fees is as follows:

The Bursar is instructed to collect from each student at the beginning of the session in September of each year the following amounts: Room rent, fuel and lights, $15.00; incidental fee, $5.00; medical fee, $3.00; lecture fee, $1.00; library fee, $1.00; furniture fee, $1.00; physical culture fee, $1.00; fee to cover damage to guns issued to cadets, $5.00; board for September, $10.00. Total $42.00.

Day students pay in full for half year on entering.

In addition to the above each student will be required to purchase a uniform, costing $18.00. Five dollars of this must be paid when measure is taken, and the balance when the uniform is delivered, which will be by the last of September.

In addition to the above, the following Department fees will be paid to the Bursar at the same time:

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students..	$ 10.00	$ 1.00	$ 4.00	$ 1.00	$..........	$ 1.00
C. E. " ..	1.00	1.00	4.00	3.00	....	....
M. E. " ..	2.00	2.00	6.00	3.00	2.00	2.00
E. E. " ..	3.00	3.00	6.00	3.00	....	....
Chem. " ..	10.00	6.00	4.00	3.00	....	....
Tex. " ..	9.00	8.00	8.00	4.00	7.00	7.00

The Bursar will collect from each pay student by November first of each year tuition for half the session (amount $22.50).

The following are the January payments (without scholarship): room rent, fuel and lights, $15.00; tuition (half session), $22.50; furniture fee, $1.00; medical fee, $3.00; physical culture fee, $1.00; board for January, $10.00. Total, $52.50.

The amount required of students with scholarships is the same as above, less $22.50, or $30.00.

The College rooms are supplied with necessary furniture. Each student should bring with him two pairs of blankets, two pairs of sheets, two pillowcases, one pillow and two bedspreads for single bed.

UNIFORM.

The College uniform must be worn while on military duty by all students. It must be purchased at the College from the contractor. The uniform is of a strong gray cloth, and with care it will last a year. Each student is required to wear an overcoat during cold weather. Overcoats may be brought from home, or purchased in the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Many students pay their own expenses, either wholly or partly, by doing various kinds of work. There is regular employment for a limited number, enabling them to earn from $4 to $10 a month. There is also occasional employment, paying from $2.50 to $5 a month. The work offered is mainly on the farm, in the barn, milking and feeding cattle, etc., and is for agricultural students only. There is very little work available for others, except serving in the dining-room. Young men should not rely upon material help from work the first year, as most of the work is given to students who have had a year's experience at the College. Application for work should be made before the student comes to college.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $2,652.33.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillowcases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 3 o'clock P. M., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

COURSES OF INSTRUCTION.

The College offers the following courses of instruction:

I. Four-year Courses:

1st. Agriculture (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. Engineering (including Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, and Industrial Chemistry).

3d. Textile Industry or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate in the four-year course in Agriculture, in Chemistry, or in Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. Short Courses of one year in Agriculture, and of two years in Textile Industry, in the Mechanic Arts (including Carpentry, Woodturning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. Winter Courses in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting seven weeks. A one-week's course in Agriculture, beginning with the opening of the Winter Term.

IV. Normal Courses for the training of teachers along industrial lines.

V. Graduate Courses, extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

SCHOOL OF AGRICULTURE.

I. The Four-year Course in Agriculture.
Ia. The One-year Course in Agriculture.
Ib. The Seven-weeks Course in Agriculture and Dairying.
Ic. The One-week Course.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers four distinct courses:

I. The Four-year Course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of such studies as Mathematics, English Literature, Physics, etc., and they are not neglected in this course. *Full description of the Four-year Course begins on page* 29.

Ia. The One-year Course is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course. *The One-year Course is described on page* 46.

Ib. The Seven-weeks Winter Course is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention. *The Seven-weeks Course is described on page* 48.

Ic. The One-week Course precedes the seven-weeks course and is devoted entirely to the study of cotton, from the preparation of the soil to the marketing of the crop. Emphasis is given soil preparation, rotation, fertilization, cultivation, seed selection, insect pests, diseases, etc.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices on yield and on fertility, in varieties of fruit, of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

I. Four-year Course in Agriculture.

This course leads to the Degree of Bachelor of Agriculture.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Breeds of Live-stock, 10†	2	--	--
Dairying, 22	--	--	5
Fruit Culture, 42	5	--	--
Vegetable Gardening, 43	--	5	--
Botany, Elementary, 55	3	3	3
Animal Physiology, 33	2	4	4
Algebra, 84	5	3	--
Geometry, 85	--	2	5
English, 87	3	3	3
Military Drill, 99	3	3	2

*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Sophomore Year.

Drawing, 80	2	2	--
Woodwork, 82	--	2	2
Animal-breeding, 12	--	3	--
Stock-feeding, 14	--	--	4
Poultry Husbandry, 29	--	--	3
Plant Diseases, 57	3	--	--
Systematic Botany, 56	--	--	3
Zoology, 64	4	--	--
Economic Entomology, 65	--	3	--
Inorganic Chemistry, 70	3	3	3
Inorganic Chemistry (laboratory), 71	2	2	2
Physics, 78	2	2	2
American Literature, 88	3	3	3
Military Drill, 99	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment, 1	4	--	--
Farm Crops, 3	--	2	5
Stock-judging, 11	2	--	--
Veterinary Anatomy, 34	4	--	--
Veterinary Medicine, 35	--	4	--
Veterinary Practice, 36	--	--	2
Landscape Gardening, 44	--	--	3
Bacteriology, 59	2	2	2
Agricultural Chemistry, 75	2	2	2
Geology, 69	2	3	--
Soils, 2	--	--	3
Advanced Rhetoric, 89	2	2	--
Public Speaking, 90	--	--	2
Political Economy, 97	1	1	1
Military Tactics, 100	1	1	1
Military Drill, 99	3	3	2
German (elective), 92	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elect six periods of the following:			
English Literature, 91	3	3	3
German, 92	3	3	3
Military Drill, 99	3	3	2
Elect sixteen periods of the following, subject to approval of the agricultural faculty:			
Farm Management, 6	--	2	2
Special Crops, 4	5	3	--
Advanced Live-stock Judging, 15	2	--	--
Live-stock Management (beef and dairy cattle), 16	--	2	--
Live-stock Management (horses, sheep and swine), 17	--	--	2
Dairy Bacteriology, 61	3	--	--
Experimental Dairying, 25	--	--	3
Poultry Husbandry, 30	--	--	3
Veterinary Medicine, 37	3	3	3
Histology, 38	4	4	4
Forestry, 46	3	--	--
Plant-breeding, 47	3	3	--
Floriculture, 48	--	3	--
Horticulture, 49	--	--	6
Plant Diseases (advanced), 58	2	2	2
Bacteriology (advanced), 60	2	2	2
Systematic Entomology, 66	2	2	--
Bio-chemistry, 76	3	3	3
Organic Chemistry, 72	3	3	3
Analytical Chemistry (laboratory), 73 and 74	7	7	7

An acceptable thesis is prerequisite to graduation in the Four-year Agricultural Course.

FOUR-YEAR COURSE IN AGRICULTURE.

EQUIPMENT.

The College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and eighty-five acres, with two hundred and fifty acres under cultivation; a large three-story and basement barn fifty by seventy-two feet. The first floor is occupied by farm implements and machinery; the second story is occupied by horses, grain-bins, cutting implements, etc.; the third story, by hay, which is elevated by a Ricker and Montgomery hay-carrier. Just outside the barn are two 70-ton silos and one 125-ton silo. These are connected with a No. 18 Ohio feed and ensilage cutter. Power for cutting is supplied by an electric motor. The farm is supplied with all necessary machinery for the most successful and up-to-date farming.

The live-stock consists of necessary horses and mules, a herd of dairy cattle, and a herd of swine. The Poland China and Berkshire swine are pure bred, and from high-class specimens. Breeding-stock is sold as a part of the farm products.

The poultry plant has twenty-five breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

AGRONOMY.

Subjects of Instruction.

1. **Farm Equipment.**—Lectures and recitations upon selecting, planning and equipping farms; planning and erecting farm buildings, farm vehicles, and machinery; power, water, and drainage; practical exercises in drawing plans of farms and farm buildings; leveling and laying drains, dynamometer tests of wagons and farm implements, etc. Four periods, first term. Required of Juniors. Professor Newman.

2. **Soils.**—Lectures and recitations upon composition, formation, kinds and physical properties of soils and their improvement by cultivation, natural and artificial fertilizers, drainage and irrigation. Practical exercises in testing physical properties of several soils.

determining the relation of soils to heat, moisture, air, fertilizers, and mechanical analysis. Three periods, third term. Required of Juniors. Professor Newman.

3. Farm Crops.—Lectures and recitations upon the history, production, harvesting, and marketing of farm crops. Practical exercises with growing and dried specimens of farm crops. Two periods, second, and five periods, third term. For Juniors. Professor Newman.

4. Special Crops.—This course is designed for advanced work in farm crops. Corn and cotton are taken up in detail and studied in all their relations to farm economy. Other crops of importance are taken up as time permits. Five periods, first term; three periods, second term. For Seniors. Professor Newman.

6. Farm Management.—Lectures upon history of agriculture; present agricultural methods in various countries, cost and relation; profits of various farm operations and systems. Two periods, second and third terms. For Seniors. Professor Newman.

ANIMAL HUSBANDRY.

10. Breeds of Live Stock.—The origin, history and characteristics of the several breeds of live stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Two periods, first term. Required of Freshmen. Professor Michels.

11. Stock Judging.—Practical exercises are given in live-stock judging. The student is required, after familiarizing himself with the points of the score-card, to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, first term. Required of Juniors. Professor Michels.

12. Animal Breeding.—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles or laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Sophomores. Professor Michels.

14. Stock Feeding.—The course in stock feeding includes a study of the physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respective uses. The feeding of the various classes of animals will be studied, and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations. Four periods, third term. Required of Sophomores. Professor MICHELS.

15. Advanced Live-stock Judging.—This course will include advanced work in judging of live-stock. Particular stress will be laid on breed types of the different classes of farm animals. Heretofore only the dairy and beef types of cattle, fat and bacon types of swine, mutton and wool types of sheep have been considered. This advanced work will include judging of the particular breed types, classing under these general types, and will be a valuable means of fixing breed characteristics. Two periods, first term. Elective for Seniors. Professor MICHELS.

16. Live-stock Management, Beef and Dairy Cattle.—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. Two periods, second term. Elective for Seniors. Professor MICHELS.

17. Live-stock Management, Horses, Sheep, and Swine.—This course includes lectures and recitations on the feed, care, and management of horses, sheep, and swine in relation to the respective uses for which they are grown. Two periods, third term. Elective for Seniors. Professor MICHELS.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath-rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk-testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and also the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

22. Dairying.—Text-book and lecture course covering the fundamental principles of modern dairying. Two periods, third term. For Freshmen. Laboratory course consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Five periods, third term. For Freshmen. Professor Michels.

25. Experimental Dairying.—Lecture and laboratory practice in making butter and cheese of special commercial importance, and a critical study of dairy literature. Three periods, third term. For Seniors. Professor Michels.

POULTRY HUSBANDRY.

The poultry plant has twenty-five breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

29. Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods. third term. For Sophomores. Three periods, third term. Mr. Jeffrey.

30. **Poultry Husbandry.**—Theory and practice of judging fowls by comparison and score-card; special poultry keeping for special markets; comparison of different systems of poultry keeping; a discussion of articles by best writers in poultry press. Three periods, third term. For Seniors. Mr. Jeffrey.

VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

Equipment.

For instruction in the above subjects, the department is provided with lecture-room, two laboratories, pharmacy room (for drugs and surgical instruments), and dissecting room.

The laboratories are supplied with mounted skeletons of man, horse, and cow, with specimens of tumors, tuberculous tissues, and various other diseased tissues.

The laboratory for special work has microtome for cutting sections of tissue for study with microscope; glass slides, stands, and material for making permanent mounts. The other laboratory is supplied with the necessary equipment for conducting exercises in Physiology.

In the pharmacy room are samples of a large number of drugs used in comparative medicine, and a more or less complete set of surgical instruments, including an operating table for small animals, casting harness and slings for larger animals.

The object of the teaching in this department is not to turn out veterinarians, but to more thoroughly equip the agricultural student for the breeding and management of live-stock. In addition to the work required of all students in the agricultural courses, as outlined below, the Senior students in the four-year course in Agriculture may elect to do three periods a week during the entire year. When so elected, this work will be of a more advanced nature, but supplementary to that required of all students in the agricultural courses.

33. **Animal Physiology.**—The first term's work will deal largely with a study of the structure of the body, the second and third terms' work with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating principles of physiology. Two periods, first term; four periods, second and third terms. Required of Freshmen. Doctor Roberts and Mr. Spoon.

34. Veterinary Anatomy.—Lectures, illustrated by charts, models, skeletons, sketches, and by dissections.

Special attention will be given to the organs of digestion and locomotion and such other parts as are of particular interest to the stock farmer. Four periods, first term. Required of Juniors. Doctor ROBERTS and Mr. SPOON.

35. Veterinary Medicine.—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors. Doctor ROBERTS.

36. Veterinary Practice.—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Two periods, third term. Required of Juniors. Doctor ROBERTS.

37. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection. Three periods. For Seniors. Doctor ROBERTS.

38. Histology.—A microscopical study of the tissues of the body. Treats of the cell as the unit of structure and of its functions; of tissues, their classification and relation to the structure organs. Four periods. Elective for Seniors. Doctor ROBERTS and Mr. SPOON.

HORTICULTURE.

The Horticultural Department occupies rooms in the Agricultural Building, including class rooms, laboratory, vegetable and fruit cold-storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

42. **Fruit Culture.**—A course treating of the location of orchards, soil for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include practices in budding, grafting, making cuttings, and a discussion of the principles underlying such practices. Also a study of varieties of fruits, fruit buds, and exercises in pruning. Five periods, first term. Required of Freshmen. Associate Professor REIMER.

43. **Vegetable Gardening.**—This course deals with the selection and preparation of soil for vegetables, construction of hot-beds and cold-frames, fertilizing, handling of seeds, irrigation, transplanting, storing, and culture of all important vegetables. Special stress is laid on the trucking industry in North Carolina. Five periods, second term. Required of Freshmen. Associate Professor REIMER.

44. **Landscape Gardening.**—This course deals with the planning, arrangement, and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees and shrubs, flowers and flower beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors. Associate Professor REIMER.

46. **Forestry.**—This course consists of a study of the fundamentals of forestry. It deals especially with the need, influence, formation, care, and improvement of forests. Also the cutting, use, and handling of forest products. A study is made of the forest trees of greatest importance in America. Three periods, first term. Elective for Seniors. Associate Professor REIMER.

47. **Plant Breeding.**—This course includes a brief review of what has been accomplished in plant breeding and a discussion of the most important problems at the present time. It deals with the principles of plant breeding, as laws of breeding, variation and mutation, heredity,

Mendelian laws, crossing, selection, origination and improvement of varieties. The subject is treated from the horticulturist's viewpoint, dealing with fruits, vegetables, and flowers. Lectures, text-book and laboratory work. Three periods, first and second terms. More work can be taken by special arrangement if desired. Elective for Seniors. Associate Professor REIMER.

48. **Floriculture.**—In this course the important subject of forcing flowers and vegetables is taken up. It deals with the construction, heating, and ventilation of forcing-houses. Also the culture of the leading flowers and vegetables in such houses. Lectures and text-book. Three periods, second term. Elective for Seniors. Associate Professor REIMER.

49. **Horticulture.**—The last term of the Senior year the student makes a thorough study of modern experimental Horticulture. The leading horticultural investigations of the past and present are studied. A study is also made of all important literature of some horticultural subject. The latter will be chosen with reference to the student's future work. Six periods, third term. Elective for Seniors. Associate Professor REIMER.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, an incubator-room, and a cold-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fireproof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

55. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Freshmen. Professor STEVENS.

56. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor STEVENS.

57. Plant Diseases.—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Professor STEVENS.

58. Plant Diseases (Advanced).—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor STEVENS.

59. Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor STEVENS and Mr. GAINEY.

60. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Two periods. For Seniors. Professor STEVENS and Mr. HALL.

61. Dairy Bacteriology.—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Two periods, first term. For Seniors. Laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. Three periods, first term. For Seniors. Mr. Gainey.

ZOOLOGY.

64. Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-book. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Four periods, first term. Required of Sophomores. Mr. Smith.

ENTOMOLOGY.

65. Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: *a*, of orchards; *b*, of small fruits; *c*, of truck and garden crops; *d*, of cotton, corn, tobacco, grains, and grasses; *e*, of forest, shade and ornamental plants; *f*, of barn, mill, and household. Lectures and demonstrations. Three periods, second term. Required of Sophomores. Mr. Smith.

66. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life-history, and habits. Lecture and laboratory practice. Two periods, first and second terms. For Seniors. Mr. Smith.

GEOLOGY.

69. Geology.—Scott's *Introduction to Geology*. In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods, first term; three periods, second term. Required of Juniors.

CHEMISTRY.*

70. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

71. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. He records in a notebook his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

72. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Elective for Seniors. Professor WITHERS.

73. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work in qualitative analysis. The student is taught to detect the presence of the common metallic elements, as well as of the acids in unknown substances. A considerable portion of the time is given to lectures and recitations upon the principles involved in the different tests, writing reactions, etc. Seven periods, first term. Elective for Seniors. Doctor WILLIAMS.

74. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Introductory work in gravimetric and volumetric analysis, followed by analyses of the substances most closely related to agriculture, as fertilizers, feeding stuffs, milk, butter, etc. A considerable portion of the time is given to the discussion of the principles involved in the different analytical methods. Seven periods, second and third terms. Elective for Seniors who have taken Course 73. Doctor WILLIAMS.

75. Agricultural Chemistry.—Snyder's *Soils and Fertilizers* and Jordan's *Feeding of Animals.* A study of the facts obtained by the application of chemistry and chemical methods of investigation to agriculture. The laws of plant and animal nutrition, the economical feeding of plants and animals, and the maintenance of the fertility of the soil are considered from the chemical standpoint. Two periods. Required of Juniors. Professor WITHERS.

76. Bio-Chemistry.—Lectures and recitations. A discussion of the carbohydrates, fats and proteins. Three periods. Elective for Seniors. Professor WITHERS.

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*For further information, see course in Chemistry.

PHYSICS.*

78. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. TRUITT.

DRAWING.†

80. Elementary Mechanical Drawing.—Use of instruments; geometric drawing; elementary projection; isometric and cabinet drawing; drawings made to scale from working sketches of pieces of a machine. Two periods, first and second terms. Required of Sophomores. Mr. VAUGHAN.

SHOPWORK.†

82. Woodwork.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. Two periods, second and third terms. Required of Sophomores. Mr. CLAY.

MATHEMATICS.

84. Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON and Mr. J. A. PARK.

85. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Required of Freshmen. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

ENGLISH.

87. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

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*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shopwork, drawing and other Mechanical Engineering subjects, see course in Mechanical Engineering.

88. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

89. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

90. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

91. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

92. German.—Worman's *Modern Languages*, first and second German books; *Studién und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Three periods. Elective for Juniors and Seniors. Doctor Rudy.

POLITICAL ECONOMY AND GOVERNMENT.

97. Political Economy.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor Summey.

MILITARY SCIENCE.

99. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first and second terms; two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

100. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant Young.

ONE-YEAR COURSE IN AGRICULTURE.

This course is offered for the benefit of young men who cannot afford to take the more complete four-years course. The class-room instruction and practical work is largely a condensation of the four-years course, made appropriate to the needs of young men who are unable to remain longer than one year at the College.

Students taking this course, and under twenty-one years of age, are required to pass the entrance examination for Freshman Class.

Agriculture (Elementary).—The course in Elementary Agriculture will consist of lectures and recitations from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, taking up the analysis and classification of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Five periods. Professor NEWMAN.

Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods. Professor MICHELS.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Five periods, first term. Professor MICHELS.

Diseases of Live-stock.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent diseases, and the treatment of some of the most common diseases. Five periods, second term. Doctor ROBERTS.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. Mr. JEFFREY.

Fruit Culture.—This course includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of the leading fruits. These deal with the kind of soil; preparation of soils for fruits: varieties; origination of new varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit garden. Three periods, first term. Associate Professor REIMER.

Vegetable Gardening.—This course discusses the great trucking industry in the State, and the possibilities of the industry. This is followed by lectures on the best methods of growing the leading vegetables. Three periods, second and third terms.

Laboratory Work.—This includes practices in plant propagation, as budding, grafting, top-grafting, cutting; pruning of fruit and ornamental trees; fruit-bud studies; planting trees; transplanting, and construction of cold-frames and hot-beds. Associate Professor REIMER.

Diseases of Plants, Fungous and Insect.—Practical instruction will be given concerning the chief fungous or bacterial diseases, and the injurious insects attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures, the selection of spraying machinery and kindred subjects. Two periods. Fungous Diseases, Professor STEVENS. Insect Pests, Mr. SMITH.

Animal and Plant Life.—The structure of the leading types of lower animals and insects and of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Three periods, first term. Professor STEVENS and Mr. SMITH.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, third term. Mr. SMITH.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms. Two hours, third term. Commandant and Officers of the Battalion.

WINTER SHORT COURSES IN AGRICULTURE.

ONE-WEEK COTTON COURSE.

BEGINS JANUARY 4 AND ENDS JANUARY 10, 1910.

This course is to be made strictly practical and will embrace the preparation of the soil; fertilizers for cotton; home mixing of fertilizers and manures; manner and time of applying; varieties; planting; cultivation; gathering and preparing for market; cotton judging for both breeding purposes and for market; insect, fungous and bacterial diseases affecting cotton, and the remedies for such diseases.

The main object of this cotton course is to aid those who attempt to grow more cotton and better cotton on less land; to grow it at less cost and sell it at a greater profit.

Those taking this course will have no expenses other than board and lodging. Board may be had in the mess hall at $2.50 per week.

SEVEN-WEEKS COURSE IN GENERAL AGRICULTURE.

BEGINS JANUARY 11 AND ENDS MARCH 1, 1910.

The regular course of agricultural instruction requires four years for its completion. Many young men cannot afford to take this complete course, and for their benefit the shorter courses are offered.

No examinations are required for entrance to the seven-weeks course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. The greater part of the instruction is given in the form of lectures and laboratory work, and the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects and others by student meetings for their mutual improvement.

The regular work of the seven-weeks course begins January 11th, and all should arrive the day before, in order that their board and room may be arranged for, so that each man may be ready for the work when it begins.

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, to operate dairies, fruit farms, truck and market gardens. The National Department of Agriculture, the State Experiment Stations, the Agricultural and Mechanical Colleges and the hundreds of commercial industries requiring scientifically trained men are eagerly seeking young men of such force and training as is given in the Agricultural and Mechanical Colleges. The demand is greater than the supply. The teaching of agriculture in the public schools and the organization of agricultural high schools, with agricultural instruction as an important feature, have met with a serious check for no other reason than that there are not enough trained teachers to supply the demand.

EQUIPMENT.

The Agricultural Building is devoted entirely to agriculture, and contains laboratories and class rooms built and furnished especially for the purposes for which they are used. Equipment is constantly being added and facilities for instruction become better every year. The professors in each division of the Agricultural Department are specialists in their chosen work and are devoting their lives to study and to methods of improving rural life.

EXPENSES.

No tuition is charged for the seven-weeks course, and board may be had in the mess hall for $2.50 per week. Students who expect to room in the dormitories should be provided with bedcover, sheets, pillowcases, and towels.

While engaged in work in the dairy laboratory, students are required to wear white suits. These suits may be had at $1 apiece. The total expense of the course need not exceed $25 over and above railroad fare.

OUTLINE OF SEVEN-WEEKS COURSE.

GENERAL AGRICULTURE.

Professor Newman.

Soils.—Study of origin. formation and classes of the soils of the State; their physical properties, natural, and induced fertility; the tillage treatment of the different classes of soils and special tillage practice for the leading crops of the State; principles and practices of farm drainage.

Farm Equipment.—Selection and laying out of farm; building of farm fences, roads, houses; tools and machinery and their economic use.

Fertilizers.—Commercial fertilizers, farm manures, green manures; composition of fertilizers and the time and method of application; special composition for special crops; mixing of commercial fertilizers.

Farm Crops.—Selection of crops to be grown and their economic relationship in farm operations; preparation and cultivation; methods of planting; seed selection and plant breeding; studies of the staple crops; corn and cotton judging.

AGRICULTURAL BOTANY.

Dr. Stevens.

This course will consist of the practical study of the diseases of plants, how to recognize them and how to prevent them; bacteria, their nature, their effects for good or harm in the farm home, and how to control them, their function in the soil as nitrogen gatherers; the cross-breeding of plants; how to accomplish it, its object, and the benefits to be derived therefrom.

FEEDS AND FEEDING AND STOCK RAISING. *24 periods.*

Professor Michels.

Lectures on this subject will treat of the composition and digestibility of home-grown and commercial feeds; methods of calculating rations for different classes of farm animals, with suggestions as to the best and the most economical feeds for the different classes of live-stock.

An outline will also be given of the characteristics, care and management of the most prominent breeds of live-stock.

BREEDS OF LIVE-STOCK AND STOCK JUDGING. *24 periods.*

Professor Michels.

Lectures on this subject will treat of the characteristics of the different breeds of dairy cattle.

The practical part of the work will be given in the judging room, where the student is required to score the animals and pass upon their respective merits.

DAIRY FARMING.

Professor Michels.

Lectures, 12 periods.
Laboratory, 24 periods.

Lectures are given on the nature, composition, and secretion of milk, its uses and value as a food; the production and care of sanitary milk, management of dairy herd, details in the production of high-grade cream and butter; the marketing of dairy products, and their value when sold as milk, cream, butter and cheese.

The dairy laboratory course, given in connection with the farm dairy lecture course, consists of twenty-four periods of two hours each and comprises every detail of dairy work, butter-making, retailing milk, making cottage cheese and skimmed milk, buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products and standardizing milk and cream.

DAIRY EQUIPMENT.

The dairy laboratories occupy about four thousand square feet of floor space on the ground floor of the Agricultural Building, besides the locker-rooms, toilet and bath-rooms on same floor, and the dairy lecture-room on first floor, used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex hand separators, swing and barrel hand churns of different sizes, cream vats, hand and power butter-workers, aerators and coolers, milk-testers, and other articles useful in doing farm dairy work.

DISEASES OF LIVE-STOCK. *21 periods.*

Dr. Roberts.

The lectures on this subject will deal principally with the care and management of live-stock with a view to the prevention of diseases, but the nature, causes, and treatment of the more common diseases and injuries will also be given attention. One period each week will be devoted to a clinic, and a practical demonstration of the tuberculin test upon the dairy herd will be given during the course.

HORTICULTURE. *21 periods.*

Associate Professor Reimer.

The work in Horticulture for the winter-course students will be just as practical as it is possible to make it. Lectures will be given on fruit-growing, including preparation of soil for fruits, planting, varieties, best methods of cultivation, cover crops, fertilizers and manures, and pruning.

Lectures will also be given on soils and their preparation for vegetables, fertilizers and manures for vegetables; the home vegetable garden, early and late vegetables, planting and transplanting, hot-beds and cold-frames, cultivation of vegetables.

The laboratory work will include work in budding and grafting fruit trees, planting, pruning, treatment of injured trees; and starting of vegetables in hot-beds and cold-frames.

POULTRY RAISING. *21 periods.*

Mr. Jeffrey.

The subject of poultry raising will be considered from the farm standpoint and will include poultry-house construction, the breeds of fowls most suited to the farm and their breeding, feeding, and management, egg production, market poultry, including capons and caponizing, incubation and brooding, both natural and artificial.

Those wanting more poultry work than is provided in the regular work can, in the last half of the course, have additional work of this kind, taking care of a pen of fowls, running the incubator, raising chickens in a brooder and keeping all the records necessary in poultry work.

The poultry department is equipped with twenty-five houses, a good incubator cellar with several different makes of incubators, a brooder-house, and both indoor and outdoor brooders, a feed room with steam engine and grist and bone mills. Good specimens of ten varieties of poultry best suited to farm requirements are kept, so that students may get familiar with the requirements of the different breeds.

SHORT COURSE IN ENTOMOLOGY. *21 periods.*

Mr. Smith.

Insect injury to farm crops, fruit, and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully ten per cent. of the value of all agricultural products is destroyed each year, and yet there are many farmers who know very little of the habits and life-history of the most common insects. We should know how insects pass the winter, when they are most easily destroyed or prevented, and the best methods of combating them.

The short course in Entomology will consist of a number of lectures, illustrated by specimens, photographs, and charts, relative to insects affecting the principal crops and fruits; field observations of insects that may be studied in January and February; practical work in making and applying mixtures for destroying insects. The use of different forms of spraying apparatus will be demonstrated by practical field work performed by the students.

A little time will be given to a study of the best methods for preventing or destroying household insects.

ENGINEERING COURSES.

Four-year Courses in

- II. Civil Engineering.
- III. Mechanical Engineering.
- IV. Electrical Engineering.
- V. Mining Engineering.
- VI. Chemistry.

Two-year Course in

- IIIa. Mechanic Arts.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136†	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Architecture, 125	2	--	--
Architectural Drawing, 126	2	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Descriptive Geometry, 101	--	2	2
Electricity and Magnetism, 177	2	2	2
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

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*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 103 and 106	2	2	2
Surveying (field work), 107	2	2	2
Construction, 105	2	--	--
Descriptive Geometry, 101	2	2	2
Graphic Statics, 102	--	2	2
Mechanics, 104	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
Spanish (elective), 279	3	3	3

Senior Year.

Mechanics of Materials, 115	3	--	--
Construction, 105	--	2	2
Road-building, 112	2	--	--
Roofs and Bridges, 109	3	--	--
Bridge Design, 110	--	4	4
Municipal Engineering, 111	--	2	2
Surveying (field work), 108	2	1	1
Hydraulics, 116	--	2	2
Calculus, 269	2	--	--
Railroad Engineering, 106	2	2	2
Reinforced Concrete, 114	--	2	2
Astronomy, 113	--	2	2
Mechanics, 104	3	--	--
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
Spanish, 279	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work.

Subjects of Instruction.

101. Descriptive Geometry, Stereotomy.—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. MANN.

102. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Professor RIDDICK and Mr. MANN.

103. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying.* Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Mr. VON GLAHN.

104. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Two periods. Required of Juniors in Civil and in Mining Engineering. Three periods, first term. Required of Seniors. Mr. MANN.

105. Construction.—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction.* Lectures. Two periods, first term. Required of Juniors in Civil and in Mining Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

106. Railroad Engineering.—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering.* Two periods, second and third terms. Required of Juniors in Civil and in Mining Engineering. Two periods. Required of Seniors in Civil Engineering. Mr. MANN.

107. Surveying.—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil and in Mining Engineering. Mr. VON GLAHN and Mr. SYKES.

108. Surveying.—Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term; one period, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN, Mr. SYKES and Mr. VON GLAHN.

109. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges.* Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

110. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

111. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

112. Road Building.—Text-book on construction of roads, streets, and pavements. Lectures on practical roadmaking in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor RIDDICK.

113. Astronomy.—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor RIDDICK.

114. Reinforced Concrete.—Turneaure & Maurer's *General Theory of Concrete and Steel Construction.* Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. MANN.

115. Mechanics of Materials.—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor RIDDICK.

116. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics.* Two periods, second and third terms. Required of Seniors in Engineering. Professor RIDDICK.

ARCHITECTURE.

125. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

126. Architectural Drawing.—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. MANN and Mr. VON GLAHN.

COURSE IN MECHANICAL ENGINEERING.

The regular four-year course in Mechanical Engineering is intended to train the student for positions of trust and responsibility in engineering work, and also to furnish him with a basis for carrying on of more advanced engineering studies. The course treats of the development and transmission of power, the design and construction of machines, and the calibration and efficiency tests of machinery, boilers, and engines.

The two-year course is offered to students who wish to become machinists, draughtsmen, or stationary engineers. For entrance to this course a less degree of academic preparation is required than for entrance to the four-year Engineering Course.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 139	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

Steam Engines and Boilers, 158	2	2	2
Mechanics, 169	2	2	2
Machine Design, 140	2	2	2
Machine-shop Work, 150	2	2	2
Electrical Engineering, 183	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Applied Mechanics, 170	3	3	2
Machine Design, 141	3	3	3
Machine-shop Work, 151	2	2	2
Power Plants, 161	3	--	--
Gas Engines, 162	3	--	--
Power Transmission, 160	--	--	2
Refrigeration, 163	--	3	--
Pumping Machinery, 165	--	1	--
Heating and Ventilation, 166	--	--	3
Structural Engineering, 167	--	2	2
Steam Engineering Laboratory, 168	2	2	2
Calculus, 269	2	--	--
Hydraulics, 116	--	2	2
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
German, 277	3	3	3

MECHANICAL ENGINEERING.

Equipment.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop, office, and library. On the second floor are the recitation room and two drawing-rooms. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books available for the use of students.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two-horse-power engine, a ten-horse-power engine, a one-horse-power gasoline engine (all of which were built by students), a two-horse-power International gasoline engine, a two-horse-power McVicker automatic gasoline engine, a twenty-five-horse-power Woodbury engine, a Wheeler surface condenser, connected with a 4½x6x6 Blake air pump, an Ericsson hot-air pumping engine, apparatus for making analyses of flue gases, a fuel calorimeter, a water motor, a Worthington water meter, a complete Westinghouse airbrake equipment, a New York airbrake equipment in section, friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The shops are equipped as follows:

The woodworking equipment consists of fifteen double carpenters' benches, which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed, with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 34-inch band saw; a jig saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain-mortiser; a dovetailing machine; a 38-inch grindstone; a wood trimmer; an adjustable miter box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well-lighted and ventilated, neatly-paved room, thirty by forty feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from the fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis & Eagan lathe with 10-foot bed, 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Flather lathe with 6-foot bed, three 14-inch lathes with 6-foot bed (built in the College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a

Brown & Sharpe universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a 6-inch Curtis & Curtis pipe-threading and cutting machine, a Greenwich arbor press and an electric center grinder, a Whiton centering machine, and a Twist drill grinder. The machines have full equipment of chucks, rests, and tools. The benches are well provided with vises.

The foundry occupies a separate building 30x60 feet and is of capacity to accommodate about 30 students. It contains two Griffin oil-burning furnaces, one for cast iron, one for brass, a No. 0 Sturtevant high-pressure blower for furnishing air, and a small triplex pump for furnishing oil under pressure. There is also a crucible brass furnace, a cadet core oven, and all necessary tools for bench and floor work. A 36-inch cupola is being installed, which will add greatly to the benefit to be received from foundry work. The power for the shops is furnished by electric motors.

Subjects of Instruction.

136. Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing. Geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Elementary principles of Descriptive Geometry, cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Two periods. Required of Freshmen. Mr. VAUGHAN.

139. Mechanical Drawing.—Working sketches and drawings of machine parts from the model. Tracing and blueprinting. Elementary machine design. Cam design. Two periods. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. ELLIS.

140. Machine Design.—Study of the communication of motion by gear wheels, belts, and link work; automatic feed, parallel and quick return motions. Calculations and working drawings of machine parts, such as fastenings, hangers, couplings, and bearings. Boiler design. Estimating and checking of working drawings. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. ELLIS.

141. Machine Design.—Estimating, checking of working drawing, original design. Calculations and working drawings of types of steam engines, gas engines, gas producers, pumps, condensers, shafting, etc. Three periods. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

146. Woodwork.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in woodturning. Two periods. Required of Freshmen. Mr. CLAY.

147. Forge-work.—Exercises in working with iron and steel. Welding, tempering and casehardening. Uses and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

148. Foundry.—Recitations and exercises in foundry work; including molding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of all Freshmen third term, and of Sophomores in Mechanical and Electrical Engineering first term. Mr. WHEELER.

149. Pattern Making.—Exercises in making patterns and moulds of machine parts. Two periods, second and third terms. Required of Sophomores in Mechanical, Electrical, and Mining Engineering. Mr. CLAY.

150. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. PARK.

151. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Two periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

In all practical courses the student's attention is directed to cost of production and its principal elements—time and method.

158. Steam Engines and Boilers.—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed water heaters; mechanical stokers; smoke consumers and chimneys are studied in detail. Two periods. Required of Juniors in Mechanical and Textile, and Seniors in Electrical and Mining Engineering. Professor SATTERFIELD.

160. Transmission of Power.—This work includes a study of the methods employed for the transmission and measurements of power in machine shops and factories, and review of experiments which have been made to determine the efficiency of various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

161. Power Plants.—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

162. Gas Engines.—Theory of the gas engine. Various types of gas, gasoline, and oil engines. Brake and indicated horse-power; efficiency. Gas producers. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

163. Refrigeration.—Various types of ice-making machinery. Compression and absorption systems. Carbon dioxide and compressed-air machines. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

165. Pumping Machinery.—Direct acting, fly-wheel and duplex and centrifugal pumps. Pumping engines. Waterworks machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

166. Heating and Ventilation.—Steam, hot water, furnace and blower systems of heating. Heating boilers. Ventilation. Design of heating and ventilating system. Three periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

167. Structural Engineering.—The manufacture and uses of different metals—rolled sections used in bridge, structural work, and general engineering. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Mr. ELLIS.

168. Steam Engineering Laboratory.—Practice in engine running; valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Two periods; required of Seniors in Mechanical Engineering. One period; required of Seniors in Electrical Engineering. A brief course in Surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines, and machinery by the use of transit and level. Professor SATTERFIELD and Mr. ELLIS, Mr. VAUGHAN and Mr. CLAY.

169. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Preparatory to Applied Mechanics in Senior year. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. VAUGHAN and Mr. ELLIS.

170. Applied Mechanics.—A study of the laws of equilibrium and motion as applied to a particle and to rigid bodies; analytic treatment of stresses in framed structures, center of gravity, moment of inertia, work and energy, and friction; mechanics of materials, including stresses and deformations in tension, compression, shearing, torsion, and flexure; stresses and deformation in long columns, continuous girders, arch ribs, and reinforced concrete, and the elements of the theory of elasticity. Three periods, first and second terms; two periods, third term. Required of Seniors in Mechanical and Electrical Engineering. Mr. ELLIS and Mr. VAUGHAN.

COURSE IN ELECTRICAL ENGINEERING.

Object.—The four-year course is designed for those who wish a thorough and practical training in Electrical Engineering. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as can be seen from the list of apparatus, is well equipped with dynamos, electric motors, and testing instruments for experimental work and for investigation of problems in electrotechnics. During the Senior and Junior years a course in designing the various electrical machines is given.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry, 148	--	--	2
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Mechanical Drawing, 139	2	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 183	2	2	2
Electrical Engineering Laboratory, 186	2	2	2
Electrical Design, 191	2	2	2
Machine-shop Work, 150	2	2	2
Machine Design, 140	2	2	2
Mechanics, 169	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military, Tactics, 300	1	1	1
Military Drill, 299	3	3	2
Spanish (elective), 279	3	3	3

Senior Year.

Electrical Engineering, 184	3	3	3
Electrical Engineering, 185	2	2	2
Electrical Engineering Laboratory, 190	2	2	2
Electrical Design, 192	2	2	2
Electrical Engineering Seminary, 193	1	1	1
Steam Engines and Boilers, 158	2	2	2
Applied Mechanics, 172	3	3	2
Steam Engineering (laboratory), 168	1	1	1
Calculus, 269	2	--	--
Hydraulics, 116	--	2	2
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
Spanish, 279	3	3	3

PHYSICS.

Equipment.

The recitation-rooms and laboratories of the Department of Physics are situated in the basement of the principal building. They are spacious and well lighted.

The equipment consists of apparatus for illustrating the principles of physical science and for instruction and practice in experiments, measurements, and tests.

Subjects of Instruction.

176. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound, and light. Text-book used: Milliken & Gale's *First Course in Physics.* Four periods. Required of Freshmen in Engineering courses. Mr. Sprague and Mr. Truitt.

177. Elementary Lessons in Electricity and Magnetism.—Text-book used: *Elementary Electricity and Magnetism*, by D. C. & J. P. Jackson. Two periods. Required of Sophomores. Professor Browne.

178. Physical Laboratory.—Practice in handling units in British and metric systems. Experiments in mechanics, illustrating addition and composition of forces, the lever, the inclined plane, the pendulum, density, and specific gravity, and Boyle's law. Experiments in heat, sound, and light, covering the following subjects: Thermometer calibration, calorimetry, hygrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscope. Text-book used: Cheston-Dean-Timmerman's *Laboratory Course in Physics.* One period. Mr. Sprague and Mr. Truitt.

179. Physical Laboratory.—Continuation of Course 178. Elementary experiments in magnetism. The electric circuit. Primary batteries. Measurement of electro-motive force, current, and resistance. Telegraph and telephone circuits. One period. Required of Sophomores in Electrical, Mining, and Mechanical Engineering, and in Chemistry. Mr. Sprague.

ELECTRICAL ENGINEERING.

Equipment.

For this course two laboratories are equipped: one known as the instrument laboratory, in which measuring instruments and apparatus are kept, and the other as the dynamo laboratory, containing generators, motors, transformers, switchboards, etc. The instrument laboratory is provided with direct and alternating current voltmeters, ammeters, and wattmeters, Wheatstone bridges, galvanometers, condensers, etc. It is supplied from the central power-house with direct and alternating currents of any voltage, phase, or frequency for use in checking instruments and making measurements. The dynamo laboratory is a small one-story brick building 30 x 50 feet, and is equipped with a 3-phase synchronous motor coupled directly to a line shaft arranged to drive small generators, an 11.5 k. w. 110-volt Westinghouse d. c. generator, 20 k. w. 2-phase 110-volt Lincoln alternator, one 6-light T. H. arc-lighting generator, one 1-horse-power Sprague motor, one 8 k. w. 110-volt Siemens & Halske generator, one 2-horse-power 3-phase 110-volt G. E. induction motor, one 2 k. w. 110-volt LaRoche single-phase alternator, two 2½ k. w. 110-volt 3-phase generators, two 2½ k. w. 125-volt compound wound d. c. generators with series coils for use as series motors or generators, one 2½ k. w. 110-volt a. c. rotary converter. The laboratory also contains constant potential and constant current transformers, condensers, circuit-breakers, etc., and a switchboard well equipped with voltmeters, ammeters, frequency indicators, etc.

The central power station is also available for student use, the equipment consisting of a 75 k. w. 600-volt 3-phase Crocker-Wheeler generator coupled to a Skinner engine, two 50 k. w. 300-volt 3-phase Crocker-Wheeler generators coupled to a 150-horse-power De Laval steam turbine, one 9.5 k. w. 125-volt Westinghouse d. c. exciting generator, and switchboard provided with meters, instrument transformers, oil circuit-breakers, wattmeters, synchroscope, etc.

The department possesses a small library of standard books on all branches of Physics and Electrical Engineering.

183. Electrical Engineering.—The magnetic circuit. Electrical measurements. Electro-magnetic induction. Storage batteries. Arc-lighting. Incandescent lighting. Interior wiring. Dynamos and dynamo design. Direct current motors. Management and operation of dynamos and motors. Text-books used: Franklin & Esty's *Elements of Electrical Engineering* and Hay's *Continuous Current Engineering*. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Professor BROWNE and Professor WALTER.

184. Electrical Engineering.—Practice in calculating circuits containing resistance, inductance, and capacity. Alternators. Theory of transformers, induction motors, a. c. series motors, and repulsion motors. Power transformation and measurement. Text-book used: Franklin & Esty's *Alternating Currents*. Three periods. Required of Seniors in Electrical Engineering. Professor BROWNE and Professor WALTER.

185. Electrical Engineering.—Line construction. Switchboards and appliances. Electric power stations. Illumination. Electric car equipment. Motors and controllers. Line and track. Line calculations. Multiple unit systems. Text-book used: *Standard Handbook for Electrical Engineers.* Two periods. Required of Seniors in Electrical Engineering. Professor BROWNE and Mr. DORSEY.

186. Electrical Engineering Laboratory.—Practice in varying the ranges of ammeters and voltmeters. Various methods of measuring resistance. Permeability and hysteresis tests. Practice with direct current generators and motors. Characteristic curves. Efficiency tests. Two periods. Required of Juniors in Electrical Engineering. Mr. DORSEY.

190. Electrical Engineering Laboratory.—Senior year. Coupling d. c. generators for parallel, series and three-wire operation. Stray power tests. Kapp's pumping-back method. Heat test of a d. c. dynamo. Series and parallel a. c. circuits. Platting vector diagrams. Experiments with a. c. generators, induction and synchronous motors, transformers, etc. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Mr. DORSEY.

191. Electrical Design.—Design of Rheostats, Heating Devices, Controllers and Electro-magnets. Two periods. Required of Juniors in Electrical Engineering. Professor WALTER.

192. Electrical Design.—Design of Transformers, Direct Current Generators, Alternators, Induction Motors, and Rotary Converters. Two periods. Required of Seniors in Electrical Engineering. Professor WALTER.

193. Electrical Engineering Seminary.—Review of the current electrical engineering periodicals. One period. Required of Seniors in Electrical Engineering. Professor BROWNE.

COURSE IN MINING ENGINEERING.

The course in Mining Engineering is intended to give the student the preliminary training necessary to enable him to enter upon a career in mining. To this end he is given instruction in English, History, Political Economy, and Mathematics, which are fundamental to the more technical studies and to the greatest usefulness as a citizen. Instruction in Physics and Chemistry, Mineralogy and Geology, Surveying, Shop-work, Drawing, Machinery, and Steam affords the scientific and engineering knowledge upon which the successful work of the miner must depend. The more technical portion of the instruction includes ore dressing, metal-working, ventilation, drainage, and illumination of mines.

V. The Four-year Course in Mining Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Mechanical Drawing, 139	2	2	2
Foundry, 148	2	--	--
Pattern-making, 149	--	2	2
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Construction, 105	2	--	--
Graphic Statics, 102	--	2	2
Surveying, 103 and 106	2	2	2
Surveying (field work), 107	2	2	2
Descriptive Geometry, 101	2	2	2
Mechanics, 104	2	2	2
Analytical Geometry, 268	5	5	--
Calculus, 269	--	--	5
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

Senior Year.

Mining, 206	--	4	4
Ore Dressing, 207	4	--	--
Geology, 211	2	2	2
Metallurgy, 208	--	2	2
Mineralogy, 212	4	--	--
Assaying, 209	--	2	2
Steam Engines and Boilers, 158	2	2	2
Hydraulics, 116	--	2	2
Calculus, 269	2	--	--
Elect two subjects from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2
German (elective), 277	3	3	3

MINING AND METALLURGY.

206. Mining.—Lectures on methods of mining, including prospecting, sinking, stoping, hoisting, pumping, and ventilating; the location of mining claims, mine fires, fire-damp and dust explosions; inundations; rescue and relief of men. Four periods, second and third terms. Required of Seniors in Mining.

207. Ore Dressing.—Furnishing products for metallurgical treatment. Lectures on concentrating machinery and concentrating and enriching ores by mechanical means. Four periods, first term. Required of Seniors in Mining.

208. Metallurgy.—Introductory: combustion, calorific calculations, fuels, refractory materials, furnaces, etc. Iron and steel: the various iron and steel processes, metallography, heat treatment, mechanical treatment, chemistry. Copper: roasting, smelting, refining, wet and electrolytic processes. Gold: stamp milling, amalgamation, cyanide and chlorination processes. The metallurgy of lead and the lesser metals. Two periods, second and third terms. Required of Seniors in Mining.

209. Assaying.—Ricketts & Miller's *Notes on Assaying.* Lectures and laboratory practice in the crushing and sampling of ores; the assaying of gold, silver, lead, and other ores; corrected assays; bullion assays; extraction tests. Two periods, second and third terms. Required of Seniors in Mining.

GEOLOGY AND MINERALOGY.

211. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Two periods. Required of Seniors in Mining.

212. Mineralogy.—Moses & Parsons' *Mineralogy.* Descriptive and determinative mineralogy; blowpipe analysis and the study of the more important minerals, their properties, uses, and methods of determination. Recitations and laboratory practice. Four periods, first term. Required of Seniors in Mining.

COURSE IN CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in that department. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in applied chemical subjects. The kindred scientific subjects of Biology and Physics and the fundamental principles of engineering, are taught, together with the cultural studies included in the other courses.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

CHEMICAL EQUIPMENT.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

VI. The Four-year Course in Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 136	2	2	2
Woodwork, 146	2	2	2
Forge-work, 147	2	2	--
Foundry	--	--	2
Physics, 176	4	4	4
Physical Laboratory, 178	1	1	1
Algebra, 263	5	3	--
Geometry, 264	--	2	5
Composition and Rhetoric, 272	3	3	3
Military Drill, 299	3	3	2

Sophomore Year.

Inorganic Chemistry, 216	3	3	3
Inorganic Chemistry (laboratory), 217	2	2	2
Electricity and Magnetism, 177	2	2	2
Physical Laboratory, 179	1	1	1
Elementary Botany, 241	3	3	3
Geometry, 265	5	--	--
Advanced Algebra, 266	--	3	--
Trigonometry, 267	--	2	5
American Literature, 273	3	3	3
Military Drill, 299	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 218	3	3	3
Analytical Chemistry, 220 and 226	7	7	7
Bacteriology, 251	2	2	2
German, 277	3	3	3
Advanced Rhetoric, 274	2	2	--
Public Speaking, 275	--	--	2
Political Economy, 297	1	1	1
Military Tactics, 300	1	1	1
Military Drill, 299	3	3	2

Senior Year.

Bio-Chemistry, 233	3	3	3
Analytical Chemistry, 226	7	7	7
Organic Chemistry (laboratory), 228	4	4	4
Advanced Bacteriology, 252	2	2	2
German, 277	3	3	3
Elect one subject from the following:			
English Literature, 276	3	3	3
Military Drill, 299	3	3	2

CHEMISTRY.

216. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

217. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

218. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Chemistry. Professor Withers and Doctor Williams.

220. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common elements in unknown substances. Seven periods, first term. Required of Juniors in Chemistry. Doctor Williams.

226. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of agricultural and technical importance. Seven periods, second and third terms. Required of Juniors in Chemistry. Seven periods. Required of Seniors in Chemistry. Doctor Williams.

228. Organic Chemistry.—Laboratory work. Orndorff's *Laboratory Manual* and Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. Four periods. Required of Seniors in Chemistry. Doctor Syme.

233. Bio-Chemistry.—Lectures and recitations. A discussion of the carbohydrates, fats and proteins. Three periods. Required of Seniors in Chemistry. Professor Withers.

BOTANY.

241. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading, regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed-plants. The principles of plant breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Sophomores in Chemistry. Professor Stevens.

BACTERIOLOGY.

251. General Bacteriology.—Lectures and laboratory work on the nature, physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor STEVENS and Mr. GAINEY.

252. Bacteriology, Advanced.—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made flexible to fit the requirements of those students taking it. Two periods. Required of Seniors in Chemistry. Professor STEVENS and Mr. HALL.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet, at the same time, it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises and lectures, the scope being quite sufficient for the needs of the institution.

263. Algebra.—Wells's *New Higher Algebra*. Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor YATES, Mr. RICHARDSON and Mr. J. A. PARK.

264. Geometry.—Wentworth's *Plane and Solid Geometry*. Plane Geometry. Two periods, second term; five periods, third term. Required of all Freshmen. Professor YATES, Mr. RICHARDSON, and Mr. J. A. PARK.

265. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

266. Advanced Algebra.—Wells's *New Higher Algebra*. Permutations, combinations, continued fractions, summation of series, general theory of equations, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor YATES and Mr. RICHARDSON.

267. Trigonometry.—Wells's *Plane and Spherical Trigonometry*. Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor YATES, Mr. J. A. PARK, and Mr. RICHARDSON.

268. Analytical Geometry.—Nichols's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Five periods, first and second terms. Required of Juniors in Engineering. Professor YATES.

269. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of undeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Five periods, third term. Required of Juniors. Two periods, first term. Required of Seniors. Professor YATES.

ENGLISH.

272. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

273. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. BONN.

274. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor HARRISON.

275. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor HARRISON.

276. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor HARRISON.

MODERN LANGUAGES.

The aim of the department is to enable one *(a)* to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and *(b)* to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German for students of Chemistry and Mechanical Engineering, and Spanish for Civil and Electrical Engineering students.

277. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors or Seniors. Doctor RUDY.

278. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor RUDY.

279. Spanish.—Worman's *Modern Languages*, first and second Spanish books; *Introduccion a la Lengua Castellana*. Marion y Des Garrenes; a *Spanish Grammar* to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor RUDY.

POLITICAL ECONOMY.

297. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. Doctor SUMMEY.

MILITARY SCIENCE.

299. Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Required of all classes except Seniors. Seniors are either to take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

300. Tactics.—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Juniors. Lieutenant YOUNG.

THE TWO-YEAR COURSE IN MECHANIC ARTS.

This is largely a practical course intended for those who are not prepared, academically, to enter the four-year course. On the completion of this course a young man is fitted for a position as machinist, draughtsman, stationary engineer, or to fill similar positions.

SUBJECTS OF INSTRUCTION.

First Year.

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine; use of instruments, and tracing; geometric drawing, isometric and cabinet drawing, elementary projections, drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry, cylinders, cones, and prisms, intersections, development of surfaces. Miscellaneous problems. Four periods. Mr. VAUGHAN.

Woodwork.—Use of bench tools, working from drawings, lining, sawing, planing. Practice in making simple exercises in wood. Elementary exercises in wood-turning. Three periods. Mr. CLAY.

Forge-work.—Exercises in working with iron. Welding. Uses and care of forge tools and fires. Two periods. Mr. WHEELER.

Foundry.—Recitations and exercises in foundry work, including molding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Mr. WHEELER.

Mechanical Technology.—Classification and uses of woodworking and forging tools and machines. Methods of woodworking and forging. Arrangement, sizes, and care of belting and shafting. One period. Professor SATTERFIELD.

Arithmetic.—Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Mr. RICHARDSON and Mr. SYKES.

Algebra.—Wells' *New Higher Algebra* to quadratic equations. Five periods, second and third terms. Mr. RICHARDSON and Mr. SYKES.

Preparatory English.—The forms of the language, the spelling and definition of words, the classification and punctuation of sentences, are taught in text-book, in much class-reading and in daily written exercises. The object of this course is to impart the power of interpreting the written page and of expressing ideas in both the spoken and the written word. Three periods. Dr. SUMMEY and Mr. BONN.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two periods, third term. Commandant and Officers of the Battalion.

Second Year.

Mechanical Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Mr. Ellis.

Machine-shop work may be elected instead. Five additional periods of Mechanical Drawing may be elected.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe-work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Mr. Park.

Elective Work.—Five additional periods of shop work, either wood shop, machine shop or foundry, may be elected.

Steam and Steam Machinery.—Descriptive study of the machinery of steam power plants—engines, boilers, condensers, pumps, piping. Care and management. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Three periods. Professor Satterfield.

Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete logarithms, embracing ratio and proportion, variation, the progressions, the binomial theorem, series and partial fractions. Five periods, first term; two periods, second term. Mr. Richardson and Mr. J. A. Park.

Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term; five periods, third term. Professor Yates, Mr. Richardson, and Mr. J. A. Park.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Commandant and Officers of the Battalion.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.
VIIIa. The Two-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a typical cotton mill, is fully equipped with all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class-room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening Room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding Room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11x5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9x4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning Room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1¼-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by the T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen looms; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn, Lincoln & Co., Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2x1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton

4x1 box gingham loom, one Crompton 4x1 box loom with 20-harness dobby, one Crompton 2 and 1-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4x4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One single-box loom with 200-hook table-napkin Jacquard machine. One 4 x 1 box table-cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. Ten 4 x 4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Knitting.—One full automatic knitting machine, made by George D. Mayo Machine Company, Laconia, N. H. One ribber, made by Scott & Williams, Philadelphia, Pa. One looper, made by Beattie Manufacturing Company, Cohoes, N. Y.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, alkalies, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

H. A. Metz & Co., New York.
Badische Company, New York.
Farbenfabriken of Elberfield Co., New York.
Danker & Marston, Boston, Mass.
Berlin Aniline Works, New York.
Cassella & Co., New York.

Dye-house Equipment.—Seven dye vats; one Roessler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kier; one hand-dyeing jigger; one 15-gallon steam jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Co.'s warp dyeing machine; one Textile Finishing Co.'s warp sizing machine; one 5-can upright dryer; one small Lightfoot raw stock dyeing machine; one Tolhurst Machine Works hydro-extractor; one Schaum & Uhlinger hydro-extractor; one Mather & Platt cloth printing machine; one Fries warp dyeing machine; one dry closet.

A full equipment of analytical balances and other necessary apparatus for experiment work.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks-Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

THE FOUR-YEAR COURSE.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301†	1	1	1
Weaving, 302	2	2	2
Mechanical Drawing, 317	2	2	2
Woodwork, 320	2	2	2
Forge-work, 321	2	2	--
Foundry, 322	--	--	2
Algebra, 335	5	3	--
Geometry, 336	--	2	5
Elementary Physics, 331	2	2	2
Composition and Rhetoric, 341	3	3	3
Military Drill, 359	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	--	--
Advanced Algebra, 338	--	3	--
Trigonometry, 339	--	2	5
American Literature, 342	3	3	3
Military Drill, 359	3	3	2

Junior Year.

Carding and Spinning, 301	4	4	4
Weaving, 302	3	3	3
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Steam Engines and Boilers, 326	2	2	2
Advanced Rhetoric, 343	2	2	--
Public Speaking, 344	--	--	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	3	2
German, 348	3	3	3

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*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	4	4	4
Weaving, 302	4	4	4
Textile Designing, 303	2	2	2
Cloth Analysis, 304	1	1	1
Dyeing, 306	1	1	1
Dyeing (laboratory), 307	2	2	2
Machine-shop Work, 324	2	2	2
Elect two subjects from the following:			
English Literature, 345	3	3	3
Military Drill, 359	3	3	2
German, 348	3	3	3

DESCRIPTION OF SUBJECTS.

301. **Carding and Spinning.**—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning; baling and marketing the raw staple. Cotton at the mill: selecting and mixing. Openers and lappers: cards, sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of Freshmen, Sophomores, Juniors, and Seniors. Assistant Professor Parker.

302. **Weaving.**—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinder;

immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor Nelson and Mr. Steed.

303. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piqués. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor NELSON and Mr. STEED.

304. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, Seniors. Professor NELSON and Mr. STEED.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dye stuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 301	1	1	1
Weaving, 302	2	2	2
Mechanical Drawing, 317	2	2	2
Woodwork, 320	2	2	2
Forge-work, 321	2	2	--
Foundry, 322	--	--	2
Algebra, 335	5	3	--
Geometry, 336	--	2	5
Elementary Physics, 331	2	2	2
Composition and Rhetoric, 341	3	3	3
Military Drill, 359	3	3	2

Sophomore Year.

Carding and Spinning, 301	2	2	2
Weaving, 302	2	2	2
Textile Designing, 303	2	1	1
Cloth Analysis, 304	--	1	1
Inorganic Chemistry, 309	3	3	3
Inorganic Chemistry (laboratory), 310	2	2	2
Geometry, 337	5	--	--
Advanced Algebra, 338	--	3	--
Trigonometry, 339	--	2	5
American Literature, 342	3	3	3
Military Drill, 359	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 306	2	2	2
Dyeing (laboratory), 307	2	2	2
Organic Chemistry, 311	3	3	3
Analytical Chemistry, 312 and 313	7	7	7
Advanced Rhetoric, 343	2	2	--
Public Speaking, 344	--	--	2
Political Economy, 353	1	1	1
Military Tactics, 360	1	1	1
Military Drill, 359	3	3	2
German, 348	3	3	3

Senior Year.

Dyeing, 306	3	3	3
Industrial Chemistry, 315	2	2	2
Analytical Chemistry, 313	7	7	7
Organic Chemistry (laboratory), 314	4	4	4
Elect two subjects from the following:			
English Literature, 345	3	3	3
Military Drill, 359	3	3	2
German, 348	3	3	3

DESCRIPTION OF SUBJECTS.

306. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalies, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyestuffs and their application to cotton. After-treatment of direct dyestuffs, including diazotising and developing and the topping with basic dyestuffs. The application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalies and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

307. Dyeing Laboratory.—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a scrap-book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

CHEMISTRY.*

309. Inorganic Chemistry.—Remsen's *Introduction to the Study of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

310. Inorganic Chemistry.—Laboratory work. Remsen's *Chemical Experiments*. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class-room. He records in a note-book his observations and the conclusions drawn from them. Two periods. Required of Sophomores. Mr. HILL.

311. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon*. The fundamental principles of organic chemistry and the more important compounds are studied. Three periods. Required of Juniors in Dyeing. Professor WITHERS.

312. Analytical Chemistry.—Treadwell's *Qualitative Analysis*. A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Seven periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.

313. Analytical Chemistry.—Treadwell's *Quantitative Analysis*. Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Seven periods. Required of Seniors in Dyeing. Doctor WILLIAMS.

314. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry*, translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Four periods. Required of Seniors in Dyeing. Doctor SYME.

315. Industrial Chemistry.—Thorpe's *Outlines of Industrial Chemistry*. A discussion of the processes and principles involved in the more important chemical industries. A discussion of the materials of engineering. Three periods. Required of Seniors in Dyeing. Professor WITHERS.

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*For further information, see course in Chemistry.

MECHANICAL ENGINEERING.*

317. Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing: isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine; elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of Freshmen. Mr. VAUGHAN.

320. Woodwork.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY.

321. Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

322. Foundry.—Recitations and exercises in foundry work, including molding, core making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of Freshmen, third term. Mr. WHEELER.

324. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. PARK.

326. Steam Engines and Boilers.—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam-engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed-water heaters; mechanical stokers; smoke-consumers and chimneys are studied in detail. Two periods. Required of Juniors in Textile Industry. Professor SATTERFIELD.

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*For full information, see course in Mechanical Engineering.

PHYSICS.†

331. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. Truitt.

MATHEMATICS.

335. Algebra (Continued).—Wells' *New Higher Algebra.* Begin with quadratic equations and complete compound interest and annuities, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients and logarithms. Five periods, first term; three periods, second term. Required of Freshmen. Professor Yates, Mr. Richardson, and Mr. J. A. Park.

336. Geometry.—Wentworth's *Plane and Solid Geometry.* Plane Geometry. Two periods, second term: five periods, third term. Required of Freshmen. Professor Yates, Mr. Richardson, and Mr. J. A. Park.

337. Solid Geometry.—Required of Sophomores. Five periods, first term. Professor Yates, Mr. J. A. Park, and Mr. Richardson.

338. Advanced Algebra.—Wells' *New Higher Algebra.* Permutations, combinations, continued fractions, summation of series, general theory of equation, and the solution of higher equations, etc. Required of Sophomores. Three periods, second term. Professor Yates and Mr. Richardson.

339. Trigonometry.—Wells' *Plane and Spherical Trigonometry.* Plane Trigonometry. Solution of plane triangles, triangulation, etc. Spherical Trigonometry. Solution of Spherical triangles. Required of Sophomores. Two periods, second term; five periods, third term. Professor Yates, Mr. J. A. Park, and Mr. Richardson.

ENGLISH.

341. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor Harrison, Doctor Summey, and Mr. Bonn.

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†For full information, see course in Electrical Engineering.

342. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor Harrison, Doctor Summey, and Mr. Bonn.

343. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor Harrison.

344. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor Harrison.

345. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor Harrison.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may elect German during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German and French.

348. **German.**—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors and Seniors. Doctor Rudy.

349. **French.**—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. Doctor Rudy.

This subject may be taken by special petition to the Faculty.

POLITICAL ECONOMY.

353. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor Summey.

MILITARY SCIENCE.

359. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; and two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

360. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Juniors. Lieutenant Young.

TWO-YEAR COURSE.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning	2	2	2
Weaving	3	3	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Mechanical Drawing	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Arithmetic	5	--	--
Algebra	--	5	5
English	3	3	3
Military Drill	3	3	2

Second Year.

Carding and Spinning	5	5	5
Warp Preparation	--	--	1
Weaving	4	4	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Dyeing	3	3	3
Machine-shop Work	2	2	2
English	3	3	3
Military Drill	3	3	2

DESCRIPTION OF SUBJECTS.

Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks.

Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton-Spinning*, by Nasmith. Required of first and second year students. Assistant Professor PARKER.

Weaving.—Lectures on construction of plain, twill, sateen, gingham, pick, and pick looms are given, also construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms: construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up dobby on loom; fixing dobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production; counts of reed and cotton harness. Finishing; cotton fabrics. Necessary equipment for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of first and second-year students. Professor NELSON and Mr. STEED.

Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first and second year students. Professor NELSON and Mr. STEED.

Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Draughting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of first and second-year students. Professor NELSON and Mr. STEED.

MECHANICAL ENGINEERING.*

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of first-year students. Mr. VAUGHAN.

Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods. Required of first-year students.

MATHEMATICS.*

Arithmetic. — Milne's *Standard Arithmetic.* Begin with decimal fractions and complete the subject. Five periods, first term. Required of first-year students. Mr. RICHARDSON and Mr. SYKES.

Algebra.—Wells' *New Higher Algebra.* Up to quadratic equations. Five periods, second and third terms. Required of first-year students. Mr. RICHARDSON and Mr. SYKES.

Preparatory English.—The forms of the language, the spelling and definition of words, the classification and punctuation of sentences, are taught in text-book, in much class reading and in daily written exercises. The object of this course is to impart the power of interpreting the written page and of expressing ideas in both the spoken and the written word. Required of first-year students. Three periods. Doctor SUMMEY and Mr. BONN.

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*For full information, see course in Engineering.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours for first and second terms; two hours, third term. Required of first and second year students. Commandant and Officers of the Battalion.

ADDITIONAL SUBJECTS IN THE SECOND YEAR.

Warp Preparation.—Lectures on construction of warp preparation machinery, spooler; section warper, ball warper; size kettle; slasher. Practice in operating machines. Laying out pattern warps for long and short chain beaming. Size mixing and boiling; value of ingredients used in sizing; sizing receipts for light, medium, and heavy sizing. One period, third term. Required of second-year students.

Dyeing.—The object of this course is to give the student a sound practical knowledge of the fundamental principles which underlie the arts of bleaching, dyeing, mercerizing, etc., of cotton yarns and fabrics. The manipulation of the various machines used in bleaching, dyeing and mercerizing is carefully explained. The physical and chemical properties of the material to be dyed receive first consideration, followed by a study of the adaptability of water for bleaching, dyeing, mordanting, etc. The practical application of the dyestuffs themselves is treated in the most thorough and detailed manner, *e. g.*, the substantive dyestuffs dyed direct, diazotised and developed, after-treated with metallic salts, topped with basic dyes, etc., the basic dyestuffs, sulphur dyestuffs, indanthrene dyestuffs, etc. Practice in color-mixing and matching is given. The student in this way acquires a collection of several hundred dyed samples which, when mounted in his pattern book, serve as a valuable reference. The course is supplemented by lectures, which will include the consideration of many difficult problems that arise in the dye-house. Three periods. Required of second-year students. Mr. HALSTEAD.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of second-year students. Mr. PARK.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor HARRISON, Doctor SUMMEY, and Mr. BONN.

NORMAL COURSES.

I. For Rural Teachers:
    (a) Two-year Course.
    (b) One-year Course.
    (c) A Two-weeks Spring Course.

II. For City Teachers:
    (a) Two-year Course.
    (b) One-year Course.
    (c) A Two-weeks Spring Course.

The Normal Courses are intended for the education of teachers. both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and the College has a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may. at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the College, except in the May School.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

SUBJECTS.		PERIODS A WEEK.		
		1st Term.	2d Term.	3d Term.
Agriculture		3	3	3
Nature Study	Plants	3	3	3
	Animals	3	3	3
English		3	3	3
Mathematics		5	5	5
Military Drill		3	3	2

Second Year.

Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	3	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Methods of Teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	--	--
Diseases of Live-stock	--	5	--
Botany	3	--	--
Poultry	--	3	3
Entomology	--	--	3
Diseases of Plants	--	--	2
Agricultural Literature	1	1	1

Elective in any College department, *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing, and others.

II. Courses for City Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Woodwork	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	2

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing	2	2	2
Woodwork	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	5	5	5
Military Drill	3	3	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology, 3, Physiological Botany 3.

(*b*) ONE-YEAR COURSE.

Drawing	3	4	4
Woodwork	4	5	5
Forge-work	2	2	2
Architecture	2	--	--
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	3	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

THE MAY SCHOOL FOR TEACHERS.

May 3 to 15, 1909.

Agriculture, Nature Study and Common Branches.—This course is designed to meet the needs of teachers of the public, common and high schools who desire more preparation in Nature Study and Agriculture. Attention is also given to school gardens. The common branches are reviewed. Attendance here meets the legal requirement of attendance at an institute once in each two years.

The laboratories, library, specimens and all other equipment of the College are at the service of students of this course, affording an excellent opportunity for instruction.

The work is so arranged that teachers desiring to devote all of their time to Agriculture and Nature Study can do so, while those teachers wishing to devote part of their time to Agriculture and Nature Study and part to the common branches can pursue this course.

Instruction will be offered in the following subjects, from which election may be made to best meet particular needs:

Elementary Agriculture and Nature Study, Prof. F. L. Stevens.
School Management, Supt. Z. V. Judd.
School Gardens, Supt. F. M. Harper.
Farm Crops, Prof. C. L. Newman.
Farm Animals, Prof. John Michels.
Horticulture, Prof. F. C. Reimer.
Insects, Mr. R. I. Smith.
Poultry, Mr. J. S. Jeffrey.

Arithmetic, English, History, etc., will be taught by the regular instructors of the College.

No fees are charged for this course. Board may be had at $2.50 a week and lodging at about $1 a week.

Only a limited number can be accommodated. Rooms must be engaged in advance.

For particulars and reservation, write to

F. L. STEVENS, *Superintendent*,
WEST RALEIGH.

DONATIONS.

To the Chemistry Department.

Standard Oil Company of New York.—A dozen samples representing crude petroleum and the products obtained.

Armour & Co., of Chicago, Ill.—Some samples of fertilizing materials.

To the Textile Department.

George D. Mayo Machine Company, Laconia, N. H.—One full automatic knitting machine.

Scott & Williams, Philadelphia, Pa.—One ribber.

Beattie Manufacturing Company, Cohoes, N. Y.—One looper.

Wildman Manufacturing Company, Norristown, Pa.—One ribber.

Textile Machinery Company, Boston, Mass.—Dunn flyers for roving frame.

To the Department of Entomology.

The Deming Company, Salem, Ohio.—Two Simplex spray nozzles, one triple spraying attachment.

Dayton Supply Company, Dayton, Ohio.—One "Economy" bucket spray pump, with hose, extension rod and nozzles.

Goulds Manufacturing Company, Seneca Falls, N. Y.—One Goulds brass sprayer and bucket, fitted with hose and spray nozzles.

Friend Manufacturing Company, Gasport, N. Y.—Two "Friend" spray nozzles.

F. E. Myers & Bro., Ashland, Ohio.—One "Little Giant" bucket spray pump, with hose and nozzles; four spray nozzles, different patterns.

Bowker Insecticide Company, Boston, Mass.—One glass jar of "Disparene" (Arsenate of Lead); one glass jar of Bowker's tree soap; one glass jar of "Pyrox" (insect and fungus combination treatment); one can of Bowker's insect emulsion.

American Horticultural Distributing Company, Martinsburg, W. Va. One glass jar "Target Brand" scale destroyer; one glass jar "Target Brand" arsenate of lead; one glass jar "Target Brand" Kree Olio; one 10-pound package "Target Brand" Quick Bordeaux.

Mr. Ervin G. Holt.—The following works of Orison Swett Marden: Success Nuggets; Peace, Power and Plenty; Secret of Achievement; Pushing to the Front; Rising in the World, or Architect of Fate; The Optimistic Life; Every Man a King; He Can Who Thinks He Can.

To the Poultry Department.

Cyphers Incubator Company, Buffalo, N. Y.—Electric incubator and brooder, incubator and colony brooder.

Chas. A. Cyphers, Buffalo, N. Y.—Incubator with automatic moisture regulator.

CATALOGUE OF STUDENTS.

GRADUATES.

Name.	*Post Office.*	*Course.*
Wiley Theodore Clay, B.E.,	Hickory,	M. E.
Percy Leigh Gainey, B.Agr.,	Fayetteville, R. 7,	Agr.
James Kemp Plummer, B.S.,	West Raleigh,	Chem.
Jesse Page Spoon, B.Agr..	Hartshorn,	Agr.
John Snipes Stroud, B.E.,	Bynum,	Tex.
Vance Sykes, B.E.,	Efland, R. 2,	C. E.
James Clarence Temple, B.Agr.,	Sanford,	Mod. Lang
William Brooks Truitt, B.E.,	Greensboro,	E. E.
Lillian Lee Vaughan, B.E.,	Franklin, Va.,	M. E.
John Lawrence Von Glahn, B.E.,	Wilmington,	C. E.

SENIOR CLASS.

John Allen Arey,	Elmwood,	Agr.
William Herbert Doughty Banck,	Wilmington,	C. E.
John William Barrett, Jr.,	Rocky Mount,	Agr.
Cecil DeWitt Brothers,	Goldsboro,	C. E.
Thorne McKenzie Clark,	Raleigh,	C. E.
Walter Miller Cowles,	Charlotte,	M. E.
John Bennett Craven,	Charlotte,	Chem.
Joseph Frank Davidson,	Statesville,	E. E.
William Samuel Dean,	Oxford,	Tex.
Carlton O'Neal Dougherty,	North, S. C.,	Tex.
Fred Atha Duke,	Raleigh,	C. E.
William Hunt Eaton,	Cleveland,	Agr.
Ralph Ringgold Faison,	Goldsboro,	Agr.
William Alexander Faison,	Goldsboro,	M. E.
Frank Lindsay Foard,	Winston-Salem,	Agr.
Roscoe Loomis Fox,	Waynesboro, Va.,	Tex.
Lewis Price Gattis,	Raleigh,	C. E.
Albert Sidney Johnston Goss.	Union, S. C.,	C. E.
Charlie Pool Gray,	Buxton,	C. E.
Andrew Hartsfield Green,	Raleigh,	Agr.
Thomas Delaware Grimshawe,	Montvale,	C. E.
William Roy Hampton,	Plymouth,	Chem.
John William Harrelson,	Lawndale,	M. E.

Name.	*Post Office.*	*Course.*
Gordon Harris,	Raleigh,	E. E.
Thomas Frederick Haywood,	Trenton,	C. E.
Leonard Henderson,	Salisbury,	M. E.
Bascombe Britt Higgins,	Leicester, R. 2,	Agr.
Daniel Harvey Hill, Jr.,	West Raleigh,	Chem.
Wayne Arington Hornaday,	Burlington,	Agr.
John William Ivey,	LaGrange,	M. E.
William Fladger R. Johnson,	Marion, S. C.,	C. E.
Frederick John Jones,	New Bern,	C. E.
James Edward Latham,	Washington,	Agr.
Ralph Long,	Graham,	Agr.
Samuel Huxley McNeely,	Waxhaw,	E. E.
Samuel Macon Mallison,	Washington,	C. E.
William Royden Marshall,	Rocky Mount,	M. E.
Ralph Cecil Mason,	Edenton,	Agr.
Arthur Ballard Massey,	Salisbury, Md.,	Agr.
Walker Morehead Millner,	Leaksville,	Tex.
Benjamin Franklin Montague,	Winston-Salem,	C. E.
William Flaud Morris,	Ashboro,	M. E.
Samuel Loftin Oliver,	Mt. Olive,	E. E.
Julius Monroe Parker,	Hunting Creek,	C. E.
John Gilbert Paschal,	Goldston,	E. E.
Peter Penick Pierce,	Pelham,	C. E.
Paul Miller Pitts,	Concord,	M. E.
James Alexander Powell,	Raleigh,	M. E.
John Moir Price,	Leaksville,	M. E.
Robert Richard Reinhardt,	Stanley Creek,	Agr.
Alfred Pratte Riggs,	Wanchese,	C. E.
Joseph Henry Robertson,	Burlington,	E. E.
James Olin Sadler,	Charlotte, R. 12,	C. E.
Francis Webber Sherwood,	Raleigh,	Chem.
Robert Arnold Shope,	Weaverville,	C. E.
George Gray Simpson,	Norfolk, Va.,	Tex.
William Neville Sloan,	Franklin,	C. E.
Hugh Stuart Steele,	Yadkin Valley,	C. E.
Samuel Fatio Stephens,	Norfolk, Va.,	C. E.
Henry Newbold Sumner,	Hertford,	C. E.
Claude Stratton Tate,	Littleton,	M. E.
Malvern Hill Terrell,	Old Fort,	E. E.
Frank Martin Thompson,	Raleigh,	Tex.

Name.	*Post Office.*	*Course.*
James Edwin Toomer,	Wilmington,	Chem.
Joseph Slaughter Whitehurst,	Elizabeth City,	C. E.
John Spicer Wilson,	Winston,	E. E.
Paul Adams Witherspoon,	Mooresville,	C. E.
Robert Job Wyatt,	Raleigh,	M. E.

JUNIOR CLASS.

James Cicero Albright.	Rock Creek,	E. E.
Alfred Scales Armfield,	Statesville,	Tex.
Robert Kenneth Babington,	Gastonia,	E. E.
Fred McCullough Black,	Mooresville,	E. E.
Thomas Sawyer Bond,	Windsor,	C. E.
Roy Bowditch,	Bakersville,	E. E.
Carl Ray Bradley,	Old Fort,	E. E.
John Benjamin Bray,	Sligo,	C. E.
Thomas Johnson Brevard,	Fairview,	Agr.
Elton Elroy Buck,	Hampton, Va.,	C. E.
John Monroe Council,	Wananish,	E. E.
William Henry Crow,	Monroe,	E. E.
William Earle Davis,	Hiddenite,	E. E.
Thomas Theodore Dawson,	Grifton,	C. E.
James Leonidas Dunn,	Scotland Neck,	Agr.
Walter Frederick Eller,	Berlin,	M. E.
Rufus Eugene Forbis,	West Raleigh,	M. E.
Elmo Vernon Freeman,	Wake Forest,	E. E.
Ransom Eaton Gill,	Raleigh,	E. E.
James Miller Gray,	Cullasaja,	Agr.
Thomas Devin Harris,	Oxford,	C. E.
Frank Hawks,	Kinston,	M. E.
Ernest Albert Haynes,	Raleigh,	C. E.
Edmund Burke Haywood,	Raleigh,	C. E.
Albert Roland Hicks,	Faison,	E. E.
Rufus Williams Hicks, Jr.,	Wilmington,	M. E.
Lyda Alexander Higgins,	Leicester, R. 2,	Agr.
Clinton White Hinshaw,	Winston-Salem,	M. E.
Louie Lee Hood,	Asheville,	C. E.
Robert Frank Jones,	Washington,	C. E.
Clyde Raymond Jordan,	Gulf,	E. E.
Luther Hill Kirby,	Lenoir,	C. E.
Mark Clinton Lasitter,	Snow Hill,	C. E.

Name.	*Post Office.*	*Course.*
Eugene Talmage Lee,	Dunn,	C. E.
Ulphian Carr Loftin,	West Raleigh,	Agr.
Frank Neely McDowell,	Charlotte,	Agr.
Lennox Polk McLendon,	Wadesboro,	Agr.
William Leake Manning,	Henderson,	E. E.
Melvin Solomon Mayes,	Stem,	M. E.
Leon Davis Moody,	East Laporte,	M. E.
Eugene Boise Moore,	Morven,	E. E.
Robert Lee Morgan,	Wilson,	M. E.
Harry Yomans Mott,	Mooresville,	Agr.
William McCormick Neale,	Greensboro,	M. E.
Joe Baxter Parks,	Concord,	E. E.
William Casper Pennington,	Thomasville,	M. E.
William Ransome Phillips,	Dunn,	E. E.
James Bruce Price,	Leaksville,	E. E.
Jay Frederick Robinson,	Hampton, Va.,	C. E.
Carl Collins Sadler,	Charlotte,	C. E.
Earle Aloysius Seidenspinner,	Washington, D. C.,	Chem.
John Waldorf Sexton,	Salem Church,	C. E.
Edwin Harrison Smith,	Weldon,	C. E.
John Francis Speight,	Whitakers,	C. E.
St. Julian Lachicotte Springs,	Georgetown, S. C.,	Agr.
Charles Burt Stainback,	Henderson,	E. E.
Harris Ingram Stanback,	Mt. Gilead,	E. E.
Thomas Barnes Stansel,	Allenton,	Chem.
William Clark Styron,	Washington,	M. E.
Thomas Bryan Summerlin,	Mt. Olive,	Tex.
Lloyd Hurst Swindell,	Raleigh,	Tex.
Thomas Hampton Thompson,	Thomasville,	M. E.
Isaac Norris Tull,	Kinston,	E. E.
Charles Emmette Walton,	Hamilton, Ga.,	E. E.
Howard W. Welles, Jr.,	Poughkeepsie, N. Y.,	E. E.
John Stafford Wilson,	Charlotte,	Tex.
Edward Leigh Winslow,	Hertford,	C. E.

SOPHOMORE CLASS.

Charles Vance Abernethy,	Shelby,	E. E.
Harvey Durward Abernethy,	Hickory,	E. E.
John Erskine Ardrey,	Pineville,	C. E.
William Bailey,	Raleigh,	E. E.
Aubrey Leland Baker,	Raleigh,	Tex.

Name.	*Post Office.*	*Course.*
Robert Jones Barbee,	Raleigh,	M. E.
Tollie Chester Barber,	Pinnacle,	Tex.
John Mann Beal,	Rocky Mount, R. 3,	Agr.
Charles Edward Bell,	Kinston,	Chem.
Hinton Quinerly Best,	Grifton,	Chem.
John Bingham Boothe,	Oxford,	E. E.
Rufus Tucker Boylan,	Raleigh,	Agr.
Joseph Malcolm Bradfield,	Charlotte,	E. E.
Joel Edward Brown,	Pendleton, S. C.,	Agr.
James Howard Brown,	Charlotte, R. 4,	Agr.
Guy Kedar Bryan,	Tampa, Fla.,	C. E.
Kit Bryan,	Catherine Lake, R. 1,	C. E.
Henry Carl Buchan,	Manly,	Agr.
Von Porter Byrum,	Charlotte,	M. E.
Henry Caleb Clay,	Hickory,	M. E.
Ralph Clement,	Mocksville,	C. E.
William Hurd Davis,	Marshville, R. 1,	E. E.
Edwin Gray Deans,	Wilson,	Tex.
Edwin Sexton Dewar,	Raleigh,	M. E.
Clifton Abraham Dukes,	Branchville, S. C.,	Agr.
John Ivey Eason,	Stantonsburg, R. 1,	Agr.
Earl Montier Evans,	Raleigh,	M. E.
Robert Stackhouse Fairly,	Laurinburg,	Agr.
James Grey Fennell,	Wilmington,	E. E.
Malthus Reamer Freeman,	Taylor,	Agr.
George Winbury Gillette,	Marines,	E. E.
Robert Walter Graeber,	Concord,	Agr.
Charles Ganzer Hall,	Wilmington,	Tex.
William James Hall,	Clemmons,	M. E.
Grover Cleveland Hardesty,	Morehead City,	Agr.
Russell Poindexter Hewlett,	Wilson,	E. E.
David Raymond Hinkle,	Lexington,	Tex.
Ralph Cleveland Hunter,	East Laporte,	Agr.
Eugene Johnston,	Mooresville,	Chem.
George Shirley Kilpatrick,	Kinston,	Tex.
Richard Henry Lewis, Jr.,	Kinston,	E. E.
Thomas Seigle Linton,	Raleigh,	E. E.
Eugene Richard McCracken,	Graham,	Tex.
Sidney McDonald,	Wilmington,	C. E.
Joseph Jenkins Mackay,	Raleigh,	E. E.
Charles McKimmon,	Raleigh,	Chem.

Name.	*Post Office.*	*Course.*
Charles Richard McManaway,	Charlotte,	M. E.
Jacob Lee Martin,	Graham,	C. E.
Robert Lee Morrison,	Concord,	C. E.
Joel William Moye,	Farmville,	Agr.
Fred Taylor Peden, Jr.,	Wilkesboro,	Agr.
John Taylor Peden, Jr.,	Wilkesboro.	E. E.
Silas Bruce Phifer,	Cleveland, R. 2,	E. E.
Paul Nathaniel Pittenger,	Raleigh,	E. E.
Josephus Plummer Quinerly.	Grifton,	Agr.
John Wesley Rollinson,	Elizabeth City,	E. E.
George Romulus Ross,	Ashboro,	Agr.
Graeme William Ross,	Charlotte,	E. E.
John Leonidas Scott, Jr.,	Graham,	Tex.
John Morgan Sherman,	Ash Grove, Va.,	Agr.
Orin Morrow Sigmon,	Hickory,	M. E.
Ernest Lytch Smith,	Laurinburg,	Agr.
Charlie Augustine Speas,	Cana, R. 2,	C. E.
Samuel Adison Spencer,	Ashboro,	Agr.
Lucius Esek Steere, Jr.,	Charlotte,	E. E.
George Logan Thompson,	Goldsboro,	E. E.
Thomas Whitmell Thorne,	Littleton,	M. E.
William Purcell Thurston,	Burlington,	C. E.
Fred Goode Tucker,	Henderson,	C. E.
Edwin Wadsworth,	Charlotte,	E. E.
James Hunter Watson,	Raleigh,	Chem.
Walter Booker Winfree,	Wadesboro, R. 3,	Agr.
Marion Fuller Wyatt,	Raleigh,	M. E.

FRESHMEN.

Neily Orman Alexander,	Matthews, R. 17,	Agr.
John Edd Beaman,	Clinton,	C. E.
James Plummer Betts,	Raleigh,	E. E.
William Hunter Bingham,	Concord,	E. E.
William Edward Blair, Jr.,	Buffalo, N. Y.,	Agr.
Allison Hodges Bond,	Fayetteville,	M. E.
Edward Bostian,	Salisbury,	C. E.
Charles Carroll Bost. Jr.,	Hickory,	C. E.
Clayton Edward Brown,	Chocowinity,	C. E.
Frank Warner Brown,	Greenville,	E. E.
Stephen Cole Bruner,	Raleigh,	Chem.
Earl Pittman Bruton,	Kinston,	E. E.

Name.	*Post Office.*	*Course.*
William Caldwell,	Mt. Ulla, R. 1,	Agr.
Price Caldwell,	Huntersville, R. 23,	E. E.
Cecil Robert Cobb,	Greenville,	E. E.
Daniel Wade Collins,	Bryson,	M. E.
Thomas Talleyrand Cresswell,	Charlotte,	E. E.
Ralph Campbell Deal,	Concord,	E. E.
Ernest Cofield Derby,	Rocky Mount,	C. E.
James Horton Doughton,	Guilford College,	M. E.
Joseph Jenkins Dunford,	Macclesfield,	Agr.
Percy Bell Ferebee,	Elizabeth City,	E. E.
William Haywood Graham, Jr.,	Rowland,	Tex.
John Krause Gunn,	Tampa, Fla.,	E. E.
Don Wood Hanks,	New Bern,	M. E.
Robert McKenzie Hardison,	Morven,	C. E.
Harry Hartsell,	Asheville,	E. E.
James Murphey Hines,	Kinston,	Tex.
Willis Askew Holding,	Raleigh,	Chem.
Sidney Willard Holman,	Raleigh,	E. E.
Samuel Benjamin Howard,	Morganton,	C. E.
Ralph Wilkinson Howell,	Belhaven,	Agr.
John Ray Ivey,	New London,	E. E.
William Lee Jenkins,	Aulander,	C. E.
John Gordon Kellogg,	Sunbury,	Agr.
John Raymond Kiker,	Polkton,	Agr.
Sam Jones Kirby,	Selma, R. 1,	Agr.
Marion Bryan Koonce,	Kinston,	M. E.
John Smedes Knox,	Raleigh,	Chem.
Carl Joshua Lambeth,	Thomasville,	M. E.
Winston Elijah Lawrence,	Raleigh, R. 4,	Agr.
Curtis Williams Lee,	Monroe,	M. E.
Lawrence Tyson Lee,	Raleigh,	E. E.
Edwin Payne Lore,	Concord,	E. E.
James Edward McGee,	Mt. Olive,	Tex.
Thomas Hunt Mackie,	Yadkinville,	E. E.
Arthur McKimmon,	Raleigh,	M. E.
Neill McQueen,	Fayetteville,	Tex.
John Gideon Matthews,	Blackville, S. C.,	Agr.
Henry Bascom Mercer,	Wilmington,	E. E.
Ronald Earl Mewborn,	Kinston,	M. E.
Simon Turner Mitchiner,	Garner,	M. E.

Name.	*Post Office.*	*Course.*
Andrew Weaver Moody,	East Laporte,	M. E.
George Frank Moore,	Scotland Neck,	Tex.
John Isham Moore,	Statesville,	C. E.
James Richard Mullen,	Charlotte,	E. E.
Harry Peachey Murray,	Charlotte,	E. E.
William Robert Murray,	Charlotte,	C. E.
Charles McKee Newcomb,	Raleigh,	C. E.
Leonard Oettinger,	Kinston,	Tex.
Charlie Washington Owens,	Saratoga, R. 1,	C. E.
Millard LaFayette Parker,	Raleigh,	E. E.
Alexander Holladay Pickel,	Raleigh,	E. E.
Bryant Monroe Potter,	Southport,	C. E.
Wade Hampton Reinhardt,	Stanley,	Agr.
Louis Napoleon Riggan,	Raleigh,	C. E.
John Calhoun Riddick,	Scotland Neck,	Tex.
Ivey Goodman Riddick,	Youngsville,	C. E.
Samuel Edward Sanders,	Raleigh,	Tex.
William Bernstein Schwartz,	Raleigh,	C. E.
David Walter Seifert,	New Bern,	C. E.
Murray Mansfield Sessoms,	Windsor,	E. E.
Fleming Bates Sherwood,	Raleigh,	Chem.
William Talmage Shull,	Beaufort,	C. E.
Fenner Smith,	Wilson,	E. E.
James McCree Smith,	Rutherfordton,	C. E.
Orus Wilder Smith,	Kipling,	M. E.
Edward Pinkney Speer,	Boonville,	E. E.
Davis Bryant Spiers,	Como,	M. E.
Talmage Holt Stafford,	West Raleigh,	Agr.
Clarence Alexander Stedman,	Greensboro,	E. E.
Needham Bryan Stevens,	Goldsboro,	Agr.
Gordon Bennett Stewart,	Charlotte,	Tex.
David Bruce Sturgill,	Piney Creek,	C. E.
Morgan Franklin Sugg,	Kinston,	Tex.
William Perry Sugg,	Princeton,	C. E.
Arthur Willis Taylor,	Raleigh,	M. E.
Culver Murat Taylor,	Tarboro,	E. E.
John Sam Thompson,	Lewiston,	Agr.
Grover Cleveland Tilley,	Rougemont,	M. E.
George Reid Trotter,	Charlotte,	C. E.
David Walter Turner,	Statesville,	Agr.

Name.	*Post Office.*	*Course.*
Charles J. Valaer,	Winston-Salem,	C. E.
Robert Terry Wade,	Morehead City,	C. E.
Archie Wakefield,	Charlotte,	E. E.
Harry Moore Walton,	Morganton,	E. E.
Earle Lampley Watson,	Cheraw, S. C.,	Agr.
Hugh Powell Whitted,	Efland, R. 1,	C. E.
Milton Ashley Wilder,	Method,	Agr.
Wallace Woodson Williams,	Raleigh,	Chem.
Wilfred T. Willson,	Gold Hill,	E. E.

TWO-YEAR COURSES.

First Year.

Derbin Linwood Allen,	Wake Forest,	M. A.
Malvern Hill Bell,	Wilmington,	M. A.
Robert Bencini,	High Point,	Tex.
Turner Bond Cooper,	Windsor,	M. A.
John C. Cosby,	Asheville,	Tex.
Liston Lloyd Dail,	Chinquepin,	M. A.
Arthur Craford Deits,	Mexico City, Mex.,	M. A.
Arthur Leroy Faulkner,	Smithfield,	Tex.
Daniel Burnie Floyd,	Fairmont,	M. A.
Pelham Agnew Fox,	Greenville, Tenn.,	Tex.
Eckie Haywood Gattis,	Raleigh,	M. A.
John Means Harden, Jr.,	Winnsboro, S. C.,	M. A.
William Waldo Hartness,	Statesville,	M. A.
Leo Dabney Heartt, Jr.,	Raleigh,	M. A.
Frank Henry Houck,	Raleigh,	M. A.
Thomas Jones Hoskins,	Edenton,	M. A.
Henry Franklin Jones,	Kinston,	Tex.
John H. Jones,	Timberlake,	M. A.
Boardman Allston Lide,	Rockingham,	M. A.
Thomas Stockton Lucas,	Plymouth,	M. A.
James Douglas Lytch,	Laurinburg,	M. A.
James Edison Lytch,	Rowland,	Tex.
Henry Clay McKenzie,	Laurinburg,	M. A.
Benjamin Harvey Parker,	Lasker,	M. A.
James Marcus Parker,	Lasker,	M. A.
Edgar Bragg Price,	Bath,	M. A.
Jacob Boyd Ross,	Blacksburg, S. C.,	M. A.

Name.	*Post Office.*	*Course.*
Zeb Roscoe Saine,	Lincolnton,	M. A.
Charles Wayland Spruill, Jr.,	Quitsna,	Tex.
Robert Griffin Stephens,	Atlanta, Ga.,	M. A.
Henry Battle Tice,	Wadesboro,	M. A.
Robert Grady White,	Concord,	Tex.
Tom Brem Williams,	Mooresville,	M. A.
George Edward Wyatt,	Burlington,	M. A.
John William Wyatt,	Burlington,	M. A.

TWO-YEAR COURSES.

Second Year.

Joe Windley Buchanan,	Roper,	M. A.
Fay Allen DesPortes,	Winnsboro, S. C.,	M. A.
Harry Mead Hodges,	LaGrange,	M. A.
John Emsley Lee,	Monroe,	Tex.
Nathaniel Rayborn Martin,	Danbury,	M. A.
Gorman McPhail,	Clinton, R. 5,	M. A.
Robert William Powell,	Goldsboro,	M. A.

ONE-YEAR COURSE IN AGRICULTURE.

Charles Keene Boone,	Lumberton.
Rudolph Richard Carlyle,	Lumberton.
John Stanly Dixon,	Grimesland.
Joseph Oscar Green,	Franklinton.
William Henry Kern,	Salisbury.
Leon Henry Lamb,	Garland.
Lewis Lesly Pitt,	Rocky Mount.
Ernest Linwood Sherlock,	Elizabeth City.
James Charles Small,	Elizabeth City.
Robert W. Small,	Washington.
Hugh Kemp Sullivan,	Lincolnton.
Elbert Moye Tyson,	Greenville.
Edny Willis,	Lawndale, R. 1.
Arthur William Winecoff,	Concord.
Matt Ransom Yarbrough,	Monroe.

SPECIAL STUDENTS.

Name.	*Post Office.*	*Course.*
Thomas William Adickes,	Raleigh,	Zoology.
Othar Alvin Barringer,	Mt. Pleasant,	Tex.
Henry Flournoy Morton,	Rocky Mount,	C. E.
Ralph Ingram Smith,	Raleigh,	Mod. Lang.
Herbert Nathaniel Steed,	Steeds,	Tex.

IRREGULAR STUDENTS.

Thomas Kincaid Bruner,	Raleigh,	Tex.
Sharpe Ireland,	Winston-Salem,	M. E.
Fred Barnet Wheeler,	Archdale,	M. E.

WINTER SHORT-COURSE STUDENTS, 1909.

Name.	*Town.*	*County.*	*State.*
John Armstrong,	McRae,	White,	Ark.
Samuel Elijah Baker,	China Grove,	Rowan,	N. C.
Ralph Graves Bryant,	Matthews,	Mecklenburg,	N. C.
Junius P. Chamblee,	Spring Hope, R. 4,	Nash,	N. C.
Walter Gaston Callihan,	Bladenboro,	Bladen,	N. C.
Charles Talmage Cobb,	Tryon,	Polk,	N. C.
Ernest Lenwood Deans,	Gatesville,	Gates,	N. C.
Eugene T. Ferrill,	Raleigh,	Wake,	N. C.
Charles C. Fortenberry,	Cleveland Mills,	Cleveland,	N. C.
John Austin Frans,	Brim,	Surry,	N. C.
James Thomas Garvey,	Beaver Creek,	Ashe,	N. C.
James Floyd Gillespie,	China Grove,	Rowan,	N. C.
Clarence McLeod Gillean,	Woodleaf,	Rowan,	N. C.
Silas Martin Gordon,	Pinnacle,	Stokes,	N. C.
Lawrence Gwynn,	Locust Hill,	Caswell,	N. C.
Leonard Parks Hardy,	Seven Springs,	Wayne,	N. C.
Andrew Hayes,	Wilson,	Wilson,	N. C.
Nathan Hayes,	Wilson,	Wilson,	N. C.
Edward Verlin Hill,	Westfield,	Surry,	N. C.
James Alfred Jones,	Southern Pines,	Moore,	N. C.
Allen Henry Alexander Lee,	Dunn,	Sampson,	N. C.
William Talmage Linney,	Hiddenite,	Alexander,	N. C.
Neb McCallum,	Summerfield,	Rockingham,	N. C.
Thomas J. McCallum,	Summerfield,	Rockingham,	N. C.
Herman McLawhorn,	Winterville,	Pitt,	N. C.
Angus McNeil,	Laurinburg,	Scotland,	N. C.
Albert Gannaway Massie,	Roseland,	Nelson,	Va.
Marshall Paulus Massie,	Bryant,	Nelson,	Va.

Name.	*Town.*	*County.*	*State.*
Adam Oscar Talmage Nesbit,	Woodleaf,	Rowan,	N. C.
Frank Willard Pulver,	Chatham.	Columbia.	N. Y.
Seth Exum Speight,	Whitakers.	Edgecombe,	N. C.
George A. Sikes.	Greensboro,	Guilford.	N. C.
Floy Michael Spoon,	Hartshorn,	Alamance.	N. C.
Marvin W. Taylor,	Grifton.	Lenoir,	N. C.
Itimous Thad Valentine,	Spring Hope,	Nash,	N. C.
Marion Dare Wetmore,	Woodleaf,	Rowan,	N. C.
William Carl Whitaker,	Letha.	Franklin,	N. C.
E. O. Young,	Kittrell,	Vance,	N. C.

MAY SCHOOL FOR TEACHERS.

Name.	*Post Office.*
Irene Johnson Cook (Mrs.),	Raleigh.
Maggie Irma Ellis,	Cary.
Annie Elizabeth Grady,	Mount Olive.
Leata Marie Hartge,	Raleigh.
Myra Lewis Hunter,	Raleigh.
Kenneth H. McIntyre,	Cary.
Dora Brent Overton,	Franklinton, R. 1.
Vera Ray,	Raleigh, R. 7.
Emily Sanders Smith,	Smithfield, R. 1.
Lina Pegram Stephenson,	Carl.
Dora Elizabeth Tuttle.	Lenoir.
Lessie Beulah Weathers,	Knightdale, R. 1.
Lydia Estelle Yates,	Cary.
Mary Stella Yonts.	Lexington.

SHORT-TERM NIGHT SCHOOL FOR TEXTILE WORKERS.

J. H. Allen,	Raleigh.
M. T. Bennett,	Raleigh.
N. T. Brown,	Raleigh.
Albert Campbell,	Raleigh.
L. M. Campbell,	Raleigh.
J. N. Cox,	Raleigh.
S. A. Crutchfield.	Raleigh.
W. J. Davis,	Raleigh.
M. L. McLean.	Raleigh.
E. M. Murray,	Raleigh.
W. N. Murray,	Raleigh.
A. C. West,	Raleigh.

NINETEENTH ANNUAL COMMENCEMENT.

MAY 27, 1908.

DEGREES CONFERRED.

BACHELORS OF AGRICULTURE.

Frank Hamilton Brown,
Minnic Luther Eargle,
Benjamin Troy Ferguson.
Percy Leigh Gainey,
John David Grady,
David John Middleton,
Jesse Page Spoon.

BACHELORS OF SCIENCE.

John Camillus App,
Frank Oscar Baldwin,

BACHELORS OF ENGINEERING.

In Civil Engineering.

John Leland Becton,
Harwood Beebe,
Asa Gray Boynton,
Alvin Deans Dupree,
Raymond Rowe Eagle,
Isaac Henry Farmer,
Junius Talmage Gardner,
Seth Mann Gibbs,
Moses Henry Gold,
Dorsey Yates Hagan,
Herbert William Kueffner,
Claude Milton Lambe,
Clarence Talmage Marsh,
Lawrence Lyon Pittman,
Ruble Isaac Poole,
Thomas Milton Poyner,
Edgar English Smith,
James Lawrence Smith,
John Lawrence Von Glahn,
Royall Edward White,
John C. Williams,
John Franklin Ziglar.

In Electrical Engineering.

George Francis Bason,
William Lamar Black,
William Bryant Burgess,
Lewellyn Hill Couch,
Maurice Mordecai Glasser,
John Henry Little,
George Lafayette Lyerly,
Benjamin Franklin Pittman,
Woodfin Bradsher Yarbrough.

In Mechanical Engineering.

John Harvey Bryan,
James Alexander Powell.

In Textile Industry.

Claud Council Dawson,
Maurice Hendrick,
Charles Edward Latta,
David Lindsay,
Harry Alexander Powell,
John Snipes Stroud.

Weldon Thompson Ellis, Course in Mechanical Engineering, Mechanical Engineer.

William Carlyle Etheridge. Course in Agriculture, Master of Science.

Thomas Franklin Parker, Course in Agriculture, Master of Science.

James Clarence Temple, Course in Agriculture, Master of Science.

Arthur John Wilson, Course in Chemistry, Master of Science.

HONORS.

HONORS IN SCHOLARSHIP.

For Four Years.

F. H. Brown,
R. R. Eagle,
M. L. Eargle,
H. W. Kueffner,
E. E. Smith.

FOR 1907-08.

Senior Class.

J. L. Becton,
F. H. Brown,
J. H. Bryan,
R. R. Eagle,
M. L. Eargle,
H. W. Kueffner,
C. T. Marsh,
T. M. Poyner,
E. E. Smith,
J. L. Von Glahn,
J. C. Williams.

Junior Class.

J. W. Harrelson,
J. M. Parker,
W. N. Sloan,
H. N. Sumner.

Sophomore Class.

T. D. Harris,
H. P. Moseley,
C. E. Walton.

Freshman Class.

C. E. Bell,
J. H. Brown,
R. W. Graeber,
J. P. Quinerly,
W. P. Thurston.

HONORS FOR PUNCTUALITY.

J. L. Becton,
W. B. Burgess,
E. E. Fulp,
Paul Hendren,
C. M. Lambe,
A. W. Moody,
J. M. Parker,
P. P. Pierce,
R. I. Poole.

FRESHMAN PRIZES FOR AGRICULTURAL LABOR.

First Prize, $10.00,	J. W. Moye.
Second Prize, $5.00,	R. W. Graeber.

MEDALS AWARDED.

National Assn. of Cotton Manufacturers,	Maurice Hendrick.
Lowenstein Chemical Medal,	T. D. Harris.

REGISTER OF ALUMNI.

CLASS OF 1893.

Name.	*Degree.*	*Address.*
Robert Wilson Allen, Superintendent of Graded School and County Superintendent.	B. E.,	Sanford, N. C.
Samuel Erson Asbury, M. S. 1896. First Assistant State Chemist. On nine months' leave at Harvard University, Cambridge, Mass.	B. S.,	College Station, Tex.
Henry Emil Bonitz, Architect.	B. E.,	Wilmington, N. C.
Frank Fuller Floyd, Vice President and Sales Manager Jellico Coal Mining Co.	B. E.,	Knoxville, Tenn.
Charles Duffy Francks, Superintendent of Graded Schools.	B. E.,	Richlands, N. C.
Edward Moore Gibbon, William W. Lyon Engineering Co.	B. E.,	Jacksonville, Fla.
George Pender Gray, Commercial Traveler Read Phosphate Co., of Nashville, Tenn.	B. S.,	Tarboro, N. C.
Charles Bolling Holladay, The Dupont Co.	B. E.,	Wilmington, Del.
William McNeil Lytch, Superintendent Laurinburg Oil Co.	B. E.,	Laurinburg, N. C.
James William McKoy, Civil Engineer and Merchant.	B. E.,	Black Mountain, N. C.
Walter Jerome Mathews, Chief Engineer for the Eastern N. C. Asylum for Insane.	B. E.,	Goldsboro, N. C.
Frank Theophilus Meacham, M. S. 1894. Superintendent State Test Farm.	B. S.,	Statesville, N. C.
Carl DeWitt Sellars, Cone Export and Commission Co.	B. E.,	Greensboro, N. C.
Charles Edgar Seymour,*	B. S.,	Raleigh, N. C.
Buxton Williams Thorne, Cashier Peoples Bank.	B. E.,	Holly Springs, Miss.
William Harrison Turner, Wholesale Dealer in Mill Feed and Grain.	B. E.,	Winston-Salem, N. C.
Charles Burgess Williams, M. S. 1896. Director of N. C. Experiment Station.	B. S.,	West Raleigh, N. C.
Louis Thomas Yarbrough, Despatching Clerk Raleigh Post Office.	B. E.,	Raleigh, N. C.
Samuel Marvin Young, Salesman Richmond Hardware Co.	B. E.,	Raleigh, N. C.

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*Deceased.

It is the purpose of the College to keep in touch with the Alumni. Please notify the Registrar promptly of any change of address.

CLASS OF 1894.

Name. *Degree.* *Address.*

Charles Edward Corpening, B. E., Lenoir, N. C., R. F. D. 3.
Farmer and Dealer in Lumber.

David Cox, B. E., Hertford, N. C.
Surveyor; Farmer; Lumberman; also in employ of Yeopim Lumber Co.

Robert Donnell Patterson, B. S., Chase City, Va.
M. S. 1898. Cashier First State Bank.

Charles Pearson, B. E., New York, N. Y.
General Contracting and Engineering Co. Home Address, Raleigh, N. C.

Zebbie George Rogers, B. E., Washington, D. C.
Resident Engineer Baltimore and Ohio Railroad.

John Hyer Saunders, B. E., Rocky Mount, N. C.
Locomotive Engineer Atlantic Coast Line Railway.

Benjamin Franklin Walton, B. S., Raleigh, N. C., R. F. D. 1.
Farmer.

John McCamy Wilson, B. E., Spartanburg, S. C.
Secretary and General Manager of Russel-Compton Co., Founders and Machinists.

CLASS OF 1895.

Thomas Martin Ashe,* B. E., Raleigh, N. C.

James Adrian Bizzell, B. S., Ithaca, N. Y.
M. S. 1900. Ph.D. Cornell University. Assistant Professor. Soil Investigations N. Y. State College of Agriculture.

John Isham Blount, B. E., Birmingham, Ala.
C. E. 1897. M. E. Cornell University. Proprietor J. I. Blount & Co., Machinery Merchants.

James Washington Brawley, B. S., Greensboro, N. C.
Superintendent of Agents Southern Life and Trust Co.

William Austin Bullock, B. S., Amsterdam, Ga.
Superintendent of Tobacco Plantation A. Cohn & Co.

David Clark, B. E., Charlotte, N. C.
M. E. 1896. C. E. 1897. M. E. Cornell University 1898.
Editor American Textile Manufacturer.

George Washington Corbett, Jr., B. E., Currie, N. C., R. F. D. 2.
Corbett & Corbett, Manufacturers of Lumber.

Edwin Speight Darden, B. S., Wilson, N. C.
Warehouseman and Farmer.

William Kearney Davis, Jr., B. E., Marion, S. C.
Superintendent Marion Manufacturing Co.

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* Deceased.

Name. *Degree.* *Address.*

Joseph Charles Dey, B. S., Norfolk, Va.
Produce Broker.
Lee Borden Ennett, B. S., Cedar Point, N. C.
Farmer and County Superintendent of Schools.
Isaac Henry Faust, B. E., Ramseur, N. C.
Contractor and Farmer.
Charles Willis Gold, B. S., Raleigh, N. C.
Secretary and Superintendent of Agencies Jefferson Standard Life Insurance Co.
William Henry Harris, B. E., Pawtucket, R. I.
M. E. 1896. Treasurer and Agent Slater Manufacturing Co.
Christopher Miller Hughes, B. E., Fayetteville, N. C.
B. S. 1899. Vice President Cumberland Savings and Trust Co.
Malcolm Beall Hunter, B. E., Not heard from.
Home address, Charlotte, N. C.
Samuel Christopher McKeown, B. E., Sumter, S. C.
Sumter Telephone Manufacturing Co.
Mann Cabe Patterson, B. E., Durham, N. C.
Die Maker Byrd Manufacturing Co.
Abram Hinman Prince, B. S., San Augustine, Tex.
Tobacco Farmer.
Charles Marcellus Pritchett, B. E., Manila, P. I.
C. E. 1896. Engineer U. S. Engineer's Office, Department of Highway Construction.
Victor Vashti Privott, B. E., Suffolk, Va.
Merchant.
Howard Wiswall, Jr., B. E., Charleston, S. C.
Engineer and Timberman Midland Timber Co.
Charles Garrett Yarbrough, B. E., Chicago, Ill.
Construction and Electrical Engineer Western Electric and Manufacturing Co.

CLASS OF 1896.

Daniel Allen, B. S., Raleigh, N. C.
Traveling Salesman.
George Stronach Fraps, B. S., College Station, Tex.
Ph. D. Johns Hopkins University. State Chemist and Chemist Texas Experiment Station.
Marion Jackson Green, B. S., Charlotte, N. C.
Pattern Maker Cole Manufacturing Co.
John Howard, B. S., Middleboro, Ky.
Lawyer and Engineer.
William Colbert Jackson, B. S., Middlesex, N. C.
Merchant and Farmer.

Name. *Degree.* *Address.*

Robert Graham Mewborne, B. S., Louisville, Ky.
Chemist Kentucky Tobacco Product Co.

Levi Romulus Whitted, B. S., Washington, D. C.
C. E. 1897. Assistant Chief Structural Engineer U. S. Treasury Department.

Henry Lloyd Williams, B. S., Cofield, N. C.
Manager of Sawmill, Cofield Manufacturing Co.

CLASS OF 1897.

Joseph Samuel Buffaloe, B. S., Garner, N. C.
M. D. Baltimore Medical College. Physician.

John William Carroll, B. S., Wallace, N. C.
M. D. University of Maryland 1903. Physician.

Charles Edward Clark, B. S., Charlotte, N. C
Superintendent of Demonstration Work in Mecklenburg County, U. S. Department of Agriculture.

Wm. Alexander Graham Clark, B. S., Raleigh, N. C.
M. E. 1899. M. E. Cornell University. Special Agent Department of Commerce and Labor, U. S. A.

Nicholas Louis Gibbon, B. S., Biddeford, Me.
Mill Engineer Saco and Pettee Machine Shops.

Ceburn Dodd Harris, B. S., Louisville, Ky.
A. M. Cornell University. Strater Bros. Tobacco Co.

Jere Eustis Highsmith, B. S., Parkersburg, N. C.
Farmer.

Clyde Bennett Kendall, B. S., Washington, D. C.
Assistant Topographer U. S. Geological Survey.

Sydney Gustavus Kennedy, B. S., Sanford, Fla.
Round House Foreman Atlantic Coast Line Railroad Co.

Joseph Lawrence Knight, B. S., Dewey, Fla.
Pas Manufacturing Co., Naval Stores.

Walter Jones McLendon, Jr., B. S., Marshall, N. C.
President and General Manager Capitola Manufacturing Co.

Repton Hall Merritt, B. S., Raleigh, N. C.
Secretary and Treasurer Powell & Powell (Incorporated).

Albert Hicks Oliver, B. S., Eastover, S. C.
Farmer and Plantation Manager H. S. Clarke.

Hugh Williams Primrose,* B. S., Raleigh, N. C.
M. S. 1900.

Willis Hunter Sanders, B. S., Roanoke Rapids, N. C.
Superintendent of Power Plant Roanoke Navigation and Water Power Co.

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* Deceased.

Name.	*Degree.*	*Address.*
Thomas Jehu Smithwick,		Mt. Airy, N. C.
Chief Engineer and Electrician N. C. Granite Corporation.		
Jordan Lea Watson,	B. S.,	Atlanta, Ga.
Southern Manager Allis-Chalmers Co.		
Bradley Jewett Wootten *	B. S.,	Wilmington, N. C.

CLASS OF 1898.

Dorsey Frost Asbury,	B. S.,	Washington, D. C.
Draftsman Naval Gun Factory.		
Sidney Hamilton Beck,	B. S.,	Washington, D. C.
Marine Engine and Boiler Draftsman Navy Department.		
Anson Elikem Cohoon,	B. S.,	Eugene, Ore.
Forest Supervisor U. S. Department of Agriculture.		
Hugh McCullom Curran,	B. S.,	Manila, P. I.
Forest Service. Home address, Westboro, Mass.		
Benjamin Carey Fennell,	B. S.,	Atlanta, Ga.
M. E. 1900. Manager Southern Office American Blower Co.		
Alpheus Rountree Kennedy,	B. S.,	Quincy, Mass.
Draftsman Fore River Shipbuilding Co.		
Frederick Creecy Lamb,	B. S.,	El Paso, Tex.
City Chemist and Bacteriologist. Home address, Elizabeth City, N. C.		
Edwin Bentley Owen,	B. S.,	West Raleigh, N. C.
Registrar N. C. College of Agriculture and Mechanic Arts.		
B. Moore Parker,	B. S.,	West Raleigh, N. C.
Assistant Professor of Textile Industry North Carolina College of Agriculture and Mechanic Arts.		
Numa Reid Stansel,	B. S.,	Washington, D. C.
Engineering Inspector U. S. Treasury Department.		
Teisaku Sugishita,	B. S.,	Kokufu, Japan.
Civil Engineer. Not heard from.		
George Frederick Syme,	B. S.,	Dante, Va.
C. E. 1907. Resident Engineer Carolina, Clinchfield and Ohio Railway.		

CLASS OF 1899.

Wm. Davidson Alexander, Jr.,	B. S.,	High Point, N. C.
Superintendent City Water and Public Works of High Point.		
Ira Wilson Barber,	B. S.,	Mt. Airy, N. C.
Superintendent Light and Power Plant and Water Works.		

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* Deceased.

Name.	*Degree.*	*Address.*
John Henderson Birdsong,	B. S.,	Chicago, Ill.
Chemist The National Malleable Castings Co.		
Francis Marion Foy,*	B. S.,	Scott's Hill, N. C.
Albert Sidney Lyon,	B. S.,	Rocky Mount, N. C.
Superintendent Public Works City of Rocky Mount.		
Carroll Lamb Mann,	B. S., C. E.,	West Raleigh, N. C.
Civil Engineer and Instructor in Civil Engineering N. C. College of Agriculture and Mechanic Arts.		
O'Kelly W. Myers,	B. S.,	Mantazilla, P. I.
Civil Service. Home address, Washington, N. C.		
Eugene Leroy Parker,	B. S.,	Mt. Pleasant, Tenn.
Manager E. L. Parker & Co. Laboratory.		
Eugene Gray Person,	B. S.,	Macon, Ga.
Train Despatcher Central of Georgia Railway.		
Frederick Erastus Sloan,	B. S.,	Raleigh, N. C.
District Agent The Security Life and Annuity Co. of Greensboro, N. C.		
Andrew Thomas Smith,	B. S.,	Camden, N. J.
Draftsman in charge New York Shipbuilding Co.		
Alexis Preston Steele,	B. S.,	Statesville, N. C.
Mechanical Engineer J. C. Steele & Sons.		
William Anderson Syme,	B. S.,	Raleigh, N. C.
M. S. 1903. Ph. D. Johns Hopkins 1906. State Oil Chemist.		
Hugh Ware,	B. S.,	Birmingham, Ala.
Chemist Decatur Car Wheel and Manufacturing Co.		
Claude B. Williams,	B. S.,	Elizabeth City, N. C.
Physician.		

CLASS OF 1900.

Kemp Alexander,	B. E.,	Marion, N. C.
Superintendent Marion Knitting Mills.		
Leslie Lyle Allen,	B. E.,	Spartanburg, S. C.
Cotton Broker Firm of Cooke & Allen.		
Robert Linn Bernhardt,	B. S.,	Salisbury, N. C.
Salisbury Hardware and Furniture Co.		
Leslie Graham Berry,	B. E.,	Des Moines, Ia.
Contracting Engineer Des Moines Bridge and Iron Works.		
James Harry Bunn,	B. E.,	Henderson, N. C.
Assistant Secretary Henderson Cotton Mills.		
Samuel Merrill Hanff,	B. S.,	Duke, N. C.
Episcopal Minister.		
George Roland Harrell,	B. S.,	Grasselli, N. J.
Manufacturing Foreman The Graselli Chemical Co.		

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* Deceased.

Name. *Degree.* *Address.*

Henry Allen Huggins, B. S., Wilmington, N. C.
Bookkeeper George W. Huggins, Jeweler.

Garland Jones, Jr., B. S., Fort Worth, Tex.
Chemist Armour & Co.

Louis Henry Mann, B. E., Washington, N. C.
D. D. S. University of Maryland 1904. Dentist.

Robert Hall Morrison, B. E., Stanley, N. C.
President Mariposa Cotton Mills.

William Montgomery Person, B. E., Sparrow's Pt., Baltimore, Md.
Maryland Steel Company.

Junius Edward Porter, B. E., Washington, N. C.
General Contractor.

Roger Francis Richardson, B. E., Ensley, Ala.
Construction Engineer Tennessee Coal, Iron and Railroad Co.

William Edwin Rose, B. E., Newport News, Va.
Newport News Shipbuilding and Dry Dock Co.

Floyd DeRoss, B. E., Charlotte, N. C.
Salesman Fostoria Incandescent Lamp Co.

Ira Obed Schaub, B. S., Raleigh, N. C.
Chemist in Soil Investigation, Department of Agriculture.

John Wade Shore, B. S., Boonville, N. C.
Farmer and Teacher.

William Turner Smith, B. E., Dublin, Ga.
Contractor Crofts & Smith.

Solomon Alexander Vest, B. S., 1900; B. Agr., 1901,
Mt. Pleasant, Tenn.
Chief Chemist F. G. Smith Laboratory and Chemist Rockdale Iron Co.

Roscoe Marvin Wagstaff, B. E., Newport News, Va.
Draftsman with Newport News Shipbuilding and Dry Dock Co.

Gaither Hall Whiting,* B. S., Richmond, Va.

CLASS OF 1901.

Fletcher Hess Barnhardt, B. E., Phoenixville, Pa.
Assistant Engineer Phœnix Bridge Co.

William Osborne Bennett, B. E., Wadesboro, N. C.
Manager South Atlantic Oil Co.

Fred Wilhelm Bonitz, B. E., Wilmington, N. C.
Attorney at Law.

Zolly Mosby Bowden, B. E., Tampa, Fla.

Bedford Jethro Brown, Charlotte, N. C.
Meter Expert Southern Power Co.

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* Deceased.

Name.	*Degree.*	*Address.*
Paul Collins,	B. S.,	New Haven, Conn.
Chemist Sanderson Fertilizer and Chemical Co.		
William Pescud Craige,	B. S.,	New Orleans, La.
With Peter F. Pescud, Underwriter.		
William Lois Craven,	B. E.,	York, Pa.
Draftsman York Bridge Co.		
Felix Gray Crutchfield,	B. E.,	Winston-Salem, N. C.
Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.		
George Maslin Davis,	B. E.,	Winston-Salem, N. C.
Chief Draftsman Southbound Railway Co.; also General Manager Winston Tag Machine Co.		
William Dollison Faucette,	B. E.,	Portsmouth, Va.
Assistant Civil Engineer Seaboard Air Line Railway.		
Benjamin Oliver Hood,	B. E.,	New York, N. Y.
With F. A. Burdett, Consulting Engineer.		
Martin Kellogg,	B. Agr.,	Gatesville, N. C.
Register of Deeds of Gates County.		
Jesse Julian Liles,	B. E.,	Pittsburg, Pa.
Electrical Engineer General Electric Co.		
Lewis Omer Lougee,	B. E.,	Pittsburg, Pa.
Of the firm of George S. Baton & Co., Civil and Mining Engineers.		
Charles Harden McQueen,	B. E.,	Richmond, Va.
Civil Engineer Atlantic Bitulithic Co.		
William Franklin Pate,	B. S.,	Wooster, Ohio.
Assistant Chemist Agricultural Experiment Station.		
Edward Oscar Smith,	B. E.,	Newport News, Va.
Special Draftsman Newport News Shipbuilding and Dry Dock Co.		
Walter Stephen Sturgill,	B. E.,	Fort D. A. Russell, Wyo.
First Lieutenant Second Field Artillery, U. S. Army.		
Beverly Nathan Sullivan,	B. S.,	Winston-Salem, N. C.
Superintendent Winston-Salem Light and Fuel Co.		
Charles Augustus Watson,*	B. S.,	Raleigh, N. C.
Benjamin Vaden Wright,	B. E.,	Laurel, Miss.
Engineer of Bridges and Buildings M. J. & K. C. R. R. Co.		

CLASS OF 1902.

William David Roseman,	B. E.,	Rocky Mount, N. C.
Farmer.		
Junius Sidney Cates,	B. S.,	Washington, D. C.
M. Agr. 1904. U. S. Department of Agriculture.		
Robert Baxter Cochran,	B. E.,	Urbana, Ohio.
Electrical Engineer. Home address, Statesville, N. C.		

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* Deceased.

Name.	*Degree.*	*Address.*
James Lumsden Ferebee,	B. E.,	Wilmington, Del.
Resident Engineer Water Department City of Wilmington.		
Robert Irving Howard,	B. E.,	Greenville, N. C.
Bookkeeper Water and Light Commission.		
John Luther McKinnon,	B. Agr.,	Laurinburg, N. C.
Farmer.		
Laurie Moseley,	B. E.,	Greensboro, N. C.
Southern Agent Owego Bridge Co.		
Vassar Young Moss,	B. E.,	Canonsburg, Pa.
Draftsman Fort Pitt Bridge Works.		
Charles Arthur Nichols,	B. E.,	Muscogee, Indian Ter.
Merchant.		
James Lafayette Parker,	B. E.,	New York, N. Y.
Assistant Engineer H. C. Keith, Consulting Engineer.		
William Benedict Reinhardt,	B. E.,	Dawson, Y. T.
Electrician Dawson Electric Light and Power Co., Ltd.		
Russell Elstner Snowden,	B. E.,	Moncure, N. C.
Assistant Civil Engineer S. A. L. Railway. Home address, Snowden, N. C.		
Joseph Platt Turner,	B. E.,	Spray, N. C.
Vice President and Superintendent Lily Mills.		
Cleveland Douglas Welch,	B. E.,	Gastonia, N. C.
Luray Cotton Mills.		

CLASS OF 1903.

William Norton Bogart,	B. E.,	Washington, N. C.
Leslie Morwood Boney,	B. E.,	Wallace, N. C.
Architect.		
John Samuel P. Carpenter,	B. E.,	Cherryville, N. C.
Superintendent and Director Melville Manufacturing Co.		
Walter Clark, Jr.,	B. E.,	Raleigh, N. C.
Lawyer.		
John Elliot Coit,	B. Agr.,	Tucson, Ariz.
Ph. D. Cornell University. Horticulturist Arizona Experiment Station.		
Summey Crouse Cornwell,	B. E.,	Shelby, N. C.
Civil Engineer.		
Charles Lester Creech,	B. S.,	New York, N. Y.
Manager of New York Office of John W. Fries.		
Eugene English Culbreth,	B. E.,	Raleigh, N. C.
Bookkeeper E. M. Uzzell & Co., Printers.		
Walter Lee Darden,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway, Portsmouth, Va.		

Name.	*Degree.*	*Address.*
Junius Franklin Diggs,	B. S.,	Rockingham, N. C., R. 1.
Farmer and Merchant.		
Theophilus Thomas Ellis,	B. E.,	Henderson, N. C., R. 4.
Farmer.		
John Daniel Ferguson,	B. E.,	Bladenboro, N. C.
Civil Engineer and Farmer.		
Hugh Pierce Foster,	B. E.	
Not heard from. Home address, Nance, Granville County, N. C.		
Oliver Max Gardner,	B. S.,	Shelby, N. C.
Lawyer.		
Lamar Carson Gidney,	B. E.,	Shelby, N. C.
John Howard Glenn,*	B. E.,	Crowder's Creek, N. C.
Emil Gunter,	B. E.,	Oshkosh, Wis.
Chief Engineer and Electrical Engineer Winnebago Traction Co. Home address, Pierson, Fla.		
Eugene Colistus Johnson,	B. E.,	Ingold, N. C.
Sawmilling.		
James Matthew Kennedy,	B. E.,	Raleigh, N. C.
Architect.		
Bennett Land, Jr.,	B. E.,	Jacksonville, Fla.
Division Engineer Seaboard Air Line Railway.		
John Thomas Land,	B. E.,	Norfolk, Va.
Civil Engineer with E. C. Foreman and J. T. Land.		
Edmond Shaw Lytch,	B. E.,	Mulberry, Fla.
Electrical Engineer Prairie Pebble Phosphate Co.		
Jesse John Morris,	B. E.,	Norfolk, Va.
Civil Engineer Norfolk and Southern Railroad. Not heard from.		
David Starr Owen,	B. E.,	Fayetteville, N. C.
Superintendent Standard Turpentine Co.		
John Harvey Parker,	B. E.,	Savannah, Ga.
Secretary-Treasurer Pepsi-Cola Bottling Co.		
Joel Powers,	B. E.,	Goldsboro, N. C.
Draftsman Dewey Bros.		
Edward Hays Ricks,	B. E.,	Enfield, N. C.
Machinist Baldwin Locomotive Works.		
Gaston Wilder Rogers,	B. E.,	Raleigh, N. C.
C. E. 1905. Civil Engineer Seaboard Air Line Railway.		
Charles Burdette Ross,	B. E.,	Charlotte, N. C.
Contractor.		
John Houston Shuford,	B. S.,	Knoxville, Tenn.
Technical Representative and Salesman Berlin Aniline Works.		
Edward Roe Stamps,	B. E.,	Macon, Ga.
Superintendent F. S. Royster Guano Co.		

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* Deceased.

Name. *Degree.* *Address.*

George Yates Stradley, B. E., Roanoke, Va.
Structural Draftsman Virginia Bridge and Iron Company.

Charles Edward Trotter, B. S., Baltimore, Md.
Medical Student Johns Hopkins University.

Jonathan Winborne White, B. S., State College, Pa.
Assistant Chemist Agricultural Experiment Station.

Edwin Seymour Whiting,* B. E., Hamlet, N. C.

CLASS OF 1904.

Nelson Adams, B. E., McColl, S. C.
Farmer.

Haywood Lewis Alderman, B. E., Panama, R. P.
Assistant Engineer Panama-American Corporation.

Eugene Cleveland Bagwell, B. E., Hull, Fla.
General Superintendent Charlotte Harbor and Northern Railway.

Edward Par Bailey, B. E., Wilmington, N. C.
President and Manager Wilmington Iron Works.

James Claudius Barber, B. E., Barber, N. C.
Farmer.

William Walter Barber, B. E., Barber, N. C.
Farmer.

William Alexander Barrett, B. E., Missoula, Mont.
Chief Engineer Missoula Light and Power Co.
Home address, White Store, N. C.

Timothy Eldridge, B. E., Mt. Olive, N. C.
Superintendent Electric Light Plant.

James William Farrior, B. E., Schenectady, N. Y.
General Electric Company, Testing Department.

William Walter Finley, B. S., North Wilkesboro, N. C.
Farmer and Breeder of Registered Percheron Horses.

George Washington Foushee, B. E., Gibsonville, N. C.
Mineola Manufacturing Company.

Edgar William Gaither, B. S., Wooster, Ohio.
Assistant Chemist Ohio Agricultural Experiment Station.

Paul Stirewalt Grierson, B. E., Newport News, Va.
Electrician in charge Charles Cory & Son, New York.

Joseph Perrin Gulley, Jr., B. E., Philadelphia, Pa.
Meterman Philadelphia Electric Light Co.

Jarvis Benjamin Harding, B. E., Guadalajara Jalisco, Mex.
Locating Engineer Southern Pacific Railway. Home address, Greenville, N. C.

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* Deceased.

Name.	*Degree.*	*Address.*
George Herbert Hodges,	B. E.,	Scottdale, Pa.
Engineer H. C. Frick Coke Co.		
Jesse McRae Howard,	B. E.,	Concord, N. C.
Assistant Superintendent Gibson Manufacturing Co.		
Branton Faison Huggins,	B. E.,	Macon, Ga.
Central Georgia Land and Lumber Co.		
Hill McIver Hunter,	B. E.,	Greensboro, N. C.
Assistant Purchasing Agent Proximity Manufacturing Co. and White Oak Mills.		
William Kerr,	B. S.,	San Diego, Cal.
In Forestry work. Care of J. A. Creelman.		
Ernest Edwin Lincoln,	B. E.,	Phoenixville, Pa.
Draftsman Phœnixville Bridge Co.		
John Fairly McIntyre,	B. E.,	Laurinburg, N. C.
Farmer.		
James McKimmon,	B. E.,	Raleigh, N. C.
Bookkeeper Raleigh Banking and Trust Co.		
Joseph Alfred Miller, Jr.,	B. E.,	Brevard, N. C.
Vice President and Manager Miller-DeVane Supply Co.		
William Field Morson,	B. E.,	Dante, Va.
Assistant Engineer C., C. & O. Railway.		
Leon Andrew Neal,	B. E.,	Bristol, Tenn.
Assistant Engineer Virginia and Southwestern Railway Co.		
William Joel Patton,	B. E.,	Brevard, N. C.
Lumber Business.		
Frederick Colwell Phelps,	B. E.,	Washington, D. C.
Care Adjutant General. Second Lieutenant U. S. Army.		
William Walter Rankin,	B. E.,	Fredericksburg, Va.
Professor of Mathematics, Fredericksburg College.		
Risden Patterson Reece,	B. E.,	Winston-Salem, N. C.
Assistant Mechanical Engineer Salem Iron Works.		
William Richardson, Jr.,	B. E.,	Scottdale, Pa.
Draftsman H. C. Frick Coke Co.		
James Clarence Temple,	B. S.,	Experiment, Ga.
M. S. 1908. Bacteriologist Georgia Experiment Station.		
Joseph Kendall Waitt,	B. E.,	Mulberry, Fla.
Civil Engineer Prairie Pebble Phosphate Co.		
Marion Emerson Weeks,	B. E.,	Portsmouth, Va.
Draftsman Norfolk Navy Yard.		
Albert Clinton Wharton, Jr.,	B. S.,	Clemmonsville, N. C.
Stock and Grain Farmer.		

CLASS OF 1905.

Name.	*Degree.*	*Address.*
Leon Franklin Abernethy,	B. Agr.,	Hickory, N. C.
With the Abernethy Hardware Co.		
Robert James Avery,	B. Agr.,	Morganton, N. C., R. 5.
Oscar Luther Bagley,	B. S.,	Weldon, N. C.
Manager Coca-Cola Bottling Works.		
Benjamin Alexander Broom,	B. E.,	Milwaukee, Wis.
Allis-Chalmers Co.		
Joel W. Bullock,	B. Agr.,	Whigham, Ga., R. 4.
Bullock Bros., Tobacco Growers.		
Henry Brozier Cartwright,	B. E.,	Jacksonville, Fla.
Assistant Civil Engineer Seaboard Air Line Railway.		
William Miller Chambers,	B. E.,	Maben, W. Va.
Pay-roll Clerk W. M. Ritter Lumber Co.		
Walter Goss Finch,	B. E.,	Brownsville, Pa.
Civil Engineer War Department.		
Sterling Graydon,	B. E.,	Charlotte, N. C.
Superintendent Atherton Mills.		
Jarvis Benjamin Harding,	B. E.,	Guadalajara Jalisco, Mex.
Locating Engineer Southern Pacific Railway.		
Richard Hugh Harper,	B. S.,	Green Park, N. C.
Manager Green Park Hotel.		
Jere Isaac Herritage,	B. E.,	Jacksonville, N. C.
Surveyor Jacksonville Lumber Co.		
Laban Miles Hoffman, Jr.,	B. E.,	Dallas, N. C.
With Monarch Cotton Mills Co.		
Lloyd Rainey Hunt,	B. E.,	High Point, N. C.
Mechanic, Electrical Engineer Shields & Co.		
Arthur Templeton Kenyon,	B. E.,	Buenaventura, Columbia.
Resident Engineer Columbian Pacific Railway.		
Wm. Franklin Kirkpatrick,	B. E., 1904, B. Agr.,	Kingston, R. I.
First Assistant Division of Biology, R. I. Experiment Station.		
Starr Neely Knox,	B. E.,	Charlotte, N. C.
Assistant Engineer Southern Railway.		
James Herritage Koonce,	B. E.,	Jacksonville, Fla.
Assistant Civil Engineer Seaboard Air Line Railway.		
Henry Marvin Lilly,	B. E.,	Waco, Tex.
Draftsman and Building Superintendent S. P. Herbert & Co.		
Lipscombe Goodwin Lykes,	B. E.,	Havana, Cuba.
With Lykes Bros.		
George Green Lynch, Jr.,	B. E.,	Jacksonville, Fla.
Supervisor of Water Softening Plants Atlantic Coast Line Railway.		
Malcolm Roland McGirt,	B. Agr.,	Fayetteville, N. C.
Farmer.		

Name. *Degree.* *Address.*

Walter Hoge McIntire, B. S., State College, Pa.
Assistant in Agronomy Pennsylvania State College.

James Oscar Morgan, B. Agr., Agricultural College, Miss.
Professor of Agronomy Mississippi Agricultural College.

Lindsay Alexander Murr, B. E., Jacksonville, Fla.
Assistant Engineer Seaboard Air Line Railway.

Garland Perry Myatt, B. S., Bayonne, N. J.
Chemist General Chemical Co.

John Alsey Park, B. E., Raleigh, N. C.
Instructor in Mathematics N. C. College of Agriculture and Mechanic Arts.

James Hicks Pierce, B. S., Warsaw, N. C.
Wholesale Lumber Business.

Pleasant H. Poindexter, Jr., B. Agr., Canadian, Tex.
Manager Yard Panhandle Lumber Co.

Edward Griffith Porter, B. E., Tampa, Fla.
Bridge Engineer Seaboard Air Line Railway.

Robert Walter Scott, Jr., B. Agr., Rocky Mount, N. C.
Superintendent of Edgecombe Test Farm, N. C. Agricultural Department.

Jonathan Rhodes Smith, B. E., Phoenixville, Pa.
Structural Draftsman The Phœnix Bridge Co.

John Davidson Spinks, B. E., Oriental, N. C.
Inspector U. S. Engineering Department.

Ervin Blakeney Stack, B. E., Monroe, N. C.
Electrical Engineer General Electric Co.

Sylvester Murray Viele, B. E., New York, N. Y.
Pennsylvania Railroad Co.

Walter Jennings Walker, B. E., Schenectady, N. Y.
General Electric Co. Home address, Winston-Salem, N. C.

Steven Dockery Wall,* B. E., Rockingham, N. C.

Walter Wellington Watt, Jr., B. E., Charlotte, N. C.
Draftsman and Machinery Salesman Saco & Pettee Machine Shops.

Archie Carraway Wilkinson, B. E., Waynesville, N. C.
Locating Engineer Shoolbred & Seaver, Civil Engineers.
Home address, Charlotte, N. C.

CLASS OF 1906.

Durant Stewart Abernethy, B. E., Lynchburg, Va.
Civil Engineer Southern Railway. Home address, Hickory, N. C.

George Gilderoy Allen, B. E., Cooleemee, N. C.
Erwin Cotton Mills Co.

George Page Asbury, B. E., Jonesboro, Tenn., R. 5.
Civil Engineer C., C. & O. Railway.

---

* Deceased.

Name. *Degree.* *Address.*

JAMES CLAUDIUS BEAVERS, B. Agr., Washington, D. C.
Scientific Fertilizer Investigation. Assistant in U. S. Department of Agriculture.

NEEDHAM ERIC BELL, B. S., Auburn, Ala.
Assistant Chemist Agricultural Experiment Station.

KENNETH LEON BLACK, B. E., Richmond, Va.
Civil Engineer with I. J. Smith Co., Contractors.

WILLIAM ANDREWS BUYS, B. E., Belhaven, N. C.
Civil Engineer for Interstate Cooperage Co.

MARK HOPKINS CHESBRO, B. Agr., Claremont, Va.
Farmer.

CONNOR CALHOUN CLARDY, B. E., Schenectady, N. Y.
Testing Department General Electric Co.

JOHN WASHINGTON CLARK, B. E., Charlotte, N. C.
B. E. (Tex.) 1907. Chadwick Mills.

JAMES DUNCAN CLARK, B. S., Tampa, Fla.
Carbonic Acid Manufacturer.

SAMUEL HERBERT CLARKE, B. E., Statesville, N. C.
Civil Engineer. Not heard from.

WILEY THEODORE CLAY, B. E., West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.

DUNCAN ARCHIBALD COX, B. S., Allens Creek, Tenn.
Chemist Bonair Coal and Iron Co.

ALEXANDER DOANE CROMARTIE, B. Agr., Garland, N. C.
Farmer.

LATTA VANDERION EDWARDS, B. E., Ithaca, N. Y.
Instructor in Railroad Engineering, Cornell University.

WELDON THOMPSON ELLIS, B. E., West Raleigh, N. C.
M. E. 1908. Instructor N. C. College of Agriculture and Mechanic Arts.

ALBERT EDWARD ESCOTT, B. E., Raleigh, N. C.
Secretary Raleigh Cotton Mills and Neuse River Mills.

WILLIAM CARLYLE ETHERIDGE, B. Agr., West Raleigh, N. C.
M. S. 1908. Assistant in Field Crops, North Carolina Agricultural Experiment Station.

JAMES BECKETT EWART, B. E., New York, N. Y.
Engineer in Experimental Laboratory Western Electric Co.

SHIRLEY WATSON FOSTER, B. Agr., Washington, D. C.
Agent and Expert Bureau of Entomology, U. S. Department of Agriculture.

ARTHUR WYNNS GREGORY, B. S., Shanghai, China.
British-American Tobacco Co.

HORACE LESTER HAMILTON, B. E., Schenectady, N. Y.
Technical Writer General Electric Co.

JOHN FREDERICK HANSELMAN, B. E., Richmond, Va.
With Morrison Machinery and Supply Co.

CLARENCE WILSON HEWLETT, B. E., Baltimore, Md.
Graduate Student Johns Hopkins University.

Name.	*Degree.*	*Address.*
James Allan Higgs, Jr.,	B. E.,	Knoxville, Tenn.
Draftsman Southern Railway.		
William Graham Knox,	B. E.	
Not heard from. Home address, Charlotte, N. C.		
Joe Poindexter Lovill,	B. E.,	Spokane, Wash.
Civil Engineer North Coast Lumber Co.		
Thompson Mayo Lykes,	B. E.,	Tampa, Fla.
Cattle Business.		
Horace Smith McLendon,	B. Agr.,	Sanford, Fla.
Farm Superintendent. Holder Real Estate Co.		
Raymond Maxwell,	B. E.,	Leachville, N. C.
Chief Engineer Mattamuskeet Railroad.		
Lacy Moore,	B. E.,	Graham, N. C.
Assistant Engineer Gilbert C. White, Constructing Engineer.		
Joseph Graham Morrison,	B. Agr.,	Stanley, N. C.
Merchant and Cotton Manufacturer.		
Jesse Clarence Myrick,	B. E.,	Wilmington, N. C.
Electrician Tidewater Power Co.		
Charles Franklin Niven,	B. Agr.,	Dahlonega, Ga.
Professor of Agriculture in North Georgia Agricultural College.		
Lola Alexander Niven,	B. Agr.,	Conway, Ark.
Professor of Agriculture Arkansas State Normal.		
Lewis Milton Oden,	B. Agr.,	Raleigh, N. C.
Dairyman.		
Thomas Jefferson Ogburn, Jr.,	B. E.,	Richmond, Va.
Everett Waddey Co.		
Clyde Ester Parker,	B. S.,	Raleigh, N. C.
Cotton Buyer, Parker Bros. & Co.		
Samuel Oscar Perkins,	B. S.,	Raleigh, N. C.
Assistant Chemist N. C. Department of Agriculture.		
Angelo Bettlena Piver,	B. E.,	Phoenixville, Pa.
Draftsman Phœnix Bridge Co.		
William Crawford Piver,	B. S.,	New York, N. Y.
With F. C. R. Hemingway.		
Durant Waite Robertson,	B. E.,	Washington, D. C.
Traveling Salesman American Tobacco Co.		
Freddie Jackson Talton,	B. Agr.,	Pikeville, N. C., R. 2.
Farmer.		
Richard Henry Tillman,	B. E.,	Rochester, N. Y.
Rochester Railway and Light Co.		
William Sidney Tomlinson,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway.		
Reid Tull,	B. E.,	Elise, N. C.
Civil Engineer Durham and Charlotte Railway.		

Name.	*Degree.*	*Address.*	
Jackson Corpening Tuttle,	B. E.,	Schenectady, N. Y.	Designing Engineer General Electric Co.
Robert Peele Uzzell,	B. Agr.,	Goldsboro, N. C.	Farming.
Peter Valaer, Jr.,	B. S.,	Washington, D. C.	Assistant Chemist Bureau Internal Revenue.
Lillian Lee Vaughan,	B. E.,	West Raleigh, N. C.	Instructor N. C. College of Agriculture and Mechanic Arts.
John Harley Williams,	B. E.,	Spartanburg, S. C.	Physical Director City Y. M. C. A.
Lewis Taylor Winston,	B. Agr.,	Bristol, Tenn.	Assistant Cashier Bristol Gas and Electric Co.

CLASS OF 1907.

Herbert Scandlin Battie,	B. E.,	Ithaca, N. Y.	Student Cornell University.
Joe Pittman Bivens,	B. E.,	New York, N. Y.	Meter Tester New York Edison Co.
Carney John Bryan,	B. E.,	Panama City, Fla.	Wholesale Dealer in Fish and Oysters.
Lindsay Ferguson Carllton,	B. E.,	Charlotte, N. C.	Light and Power Solicitor Southern Power Co.
Robert Hill Carter,	B. E.,	Wilkinsburg, Pa.	Apprentice Westinghouse Electric and Manufacturing Co.
Jacob Tatum Eaton,	B. Agr.,	Farmington, N. C.	Farmer and Dairyman.
Seba Eldridge,	B. E.,	New York City, N. Y.	Student Columbia University.
Benjamin Bryan Everett,	B. Agr.,	Palmyra, N. C.	Farmer.
John Lindsay Ferguson,	B. E.,	Wilkinsburg, Pa.	Westinghouse Electric and Manufacturing Co.
Elias Van Buren Fowler,	B. E.,	Schenectady, N. Y.	General Electric Co.
Clement Leinster Garner,	B. E.,	Key West, Fla.	U. S. Coast and Geodetic Survey.
Lovic Rodgers Gilbert,	B. E.,	Rock Hill, S. C.	Hamilton-Carhartt Cotton Mills.
Roy Joseph Gill,	B. E.,	Manila, P. I.	Civil Engineer Bureau of Lands.
Robert Strickler Graves,	B. E.,	Schenectady, N. Y	Traveling Salesman General Electric Co.

Name. *Degree.* *Address.*

George Rom. Hardesty, B. E., Goldsboro, N. C.
Assistant Engineer State Hospital.

Philip William Hardie, B. E., Manila, P. I.
Civil Engineer U. S. Government.

Jokton Lafayette Hemphill, B. E., Schenectady, N. Y.
With General Electric Co.

Lawrence James Herring, B. Agr., Raleigh, N. C.
Veterinarian.

Guy Francis Hinshaw, B. E., Winston-Salem, N. C.
Assistant City Engineer.

William Norman Holt, B. E., Smithfield, N. C.
Manager Brokerage Co., Holt & Adams.

Albert Carl Jones, B. Agr., High Point, N. C.
Veterinarian.

William Whitmore Jones, B. E., Franklin, N. C.
Laundry.

Lafayette Franck Koonce, B. Agr., Kansas City, Mo., R. 1.
Veterinary Surgeon.

Louis Edgar Lougee, B. S., Pittsburg, Pa.
Jones & Laughlin Steel Co.

Henry Kreiger McConnell, B. S., West Nashville, Tenn.
Chemist Federal Chemical Co.

Oscar Franklin McNairy, B. E., Spartanburg, S. C.
Constructing Engineer A. D. McClain, Contracting Engineer.

Eugene Franklin Meador, B. E., Reidsville, N. C.
Farmer.

Bennett Taylor Mial, Glenlyn, Va.
Foreman McClintic-Marshall Construction Co.
Home address, Raleigh, N. C.

Frank Curtis Michael, B. E., Pitstburg, Pa.
Testing Department New York Edison Co.

John Maple Mills, B. E., Raleigh, N. C.
Raleigh and Southport Railroad.

Henry Starbuck Montague, B. S., Richmond, Va.
Chemist Virginia-Carolina Chemical Co.

John Lightfoot Morson, B. E., Raleigh, N. C.
Civil Engineer Seaboard Air Line Railway.

James Elwood Overton, B. Agr., Ahoskie, N. C.
Dealer in Peanuts.

Thomas Franklin Parker, B. Agr., Powder Springs, Ga.
M. S. 1908. Teacher Seventh District Agricultural School.

Fred Maynard Parks, B. E., Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.

Arthur Lee Paschal, B. Agr., Honolulu, H. I.
Government Agricultural School.

Name.	*Degree.*	*Address.*
Guy Pinner,	B. E.,	Phoenixville, Pa.
Structural Draftsman The Phœnix Bridge Co.		
Winslow Gerald Pitman,	B. E.,	Cumberland, Md.
McClintic-Marshall Construction Co., Pittsburg, Pa. Home address, Lumberton, N. C.		
James Kemp Plummer,	B. S.,	West Raleigh, N. C.
Assistant Chemist N. C. Agricultural Experiment Station.		
Leon Jacob Schwab,	B. E.,	Savannah, Ga.
Civil Engineer Central of Georgia Railway.		
John Oscar Shuford,	B. E.,	Lincolnton, N. C.
City Engineer.		
Vance Sykes,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
Luther Russell Tillett,	B. E.,	Manila, P. I.
Civil Engineering, Bureau of Lands.		
William Brooks Truitt,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
John Ed. Turlington,	B. Agr.,	Ithaca, N. Y.
Student Cornell University.		
Edmund Farriss Ward,	B. Agr.,	Lumberton, N. C.
Lawyer.		
Lindsay Marade Weaver,	B. E.,	Lexington, N. C.
Bookkeeper.		
John Jackson Wells,	B. E.,	Rocky Mount, N. C.
Civil Engineer.		
David Lyndon White,	B. Agr.,	Greensboro, N. C., R. 2.
Dairyman Greensboro Creamery.		
Cecil Bernard Whitehurst,	B. E.,	Morton Park, Ill.
Salesman Western Electric Co.		
Arthur John Wilson,	B. S.,	Ithaca, N. Y.
M. S. 1908. Graduate Student and Teacher of Chemistry, Cornell University.		

CLASS OF 1908.

Name.	*Degree.*	*Address.*
John Camillus App,	B. S.,	Charleston, W. Va.
Chief Chemist and Bacteriologist Kanawha Water and Light Co.		
John Oscar Baldwin,	B. S.,	Richmond, Va.
Virginia-Carolina Chemical Co.		
George Francis Bason,	B. E.,	East Orange, N. J.
Crocker-Wheeler Electric Co.		
John Leland Becton,	B. E.,	Wilmington, N. C.
Deputy City Engineer.		

Name.	*Degree.*	*Address.*
Harwood Beebe,	B. E.,	Spies, N. C.
William Lamar Black,	B. E.,	Rock Hill, S. C.
Southern Power Co.		
Asa Gray Boynton,	B. E.,	Biltmore, N. C.
Landscape Engineer Vanderbilt Estate.		
Frank Hamilton Brown,	B. Agr.,	Cullowhee, N. C.
Teacher Cullowhee Normal and Industrial School.		
John Harvey Bryan,	B. E.,	Goldsboro, N. C.
Engineer Electric Light and Water Plant.		
William Bryant Burgess,	B. E.,	Rocky Mount, N. C.
Electrician Roanoke Rapids Power Co.		
Lewellyn Hill Couch,	B. E.,	Greensboro, N. C.
Traveling Salesman Central Electric Co.		
Claud Council Dawson,	B. E.,	Charlotte, N. C.
Mayes Manufacturing Co.		
Alvin Deans Dupree,	B. E.,	Greenville, N. C.
Raymond Rowe Eagle,	B. Agr.,	Raleigh, N. C.
Civil Engineer Seaboard Air Line Railway.		
Minnie Luther Eargle,	B. Agr.,	Delmar, S. C.
Farmer.		
Isaac Herbert Farmer,	B. E.,	Portsmouth, Va.
Civil Engineer Seaboard Air Line Railway.		
Benjamin Troy Ferguson,	B. Agr.,	Kimbolton, N. C.
Farmer and Teacher.		
Percy Leigh Gainey,	B. Agr.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
Junius Talmage Gardner,	B. E.,	Shelby, N. C.
Shelby Insurance and Realty Co.		
Seth Mann Gibbs,		West Raleigh, N. C.
Civil Engineer Greater Raleigh Land Co.		
Maurice Mordecai Glasser,	B. E.,	Charleston, S. C.
Moses Henry Gold,		Monroe, N. C.
Civil Engineer Seaboard Air Line Railway.		
John David Grady,	B. Agr.,	Amsterdam, Ga.
Superintendent of Dairy Farm A. Cohn & Co.		
Dorsey Yates Hagan,	B. E.,	Greensboro, N. C.
Bandy & Myers, Consulting Engineers.		
Maurice Hendrick,	B. E.,	Shelby, N. C.
Ella Cotton Mills.		
Herbert William Kueffner,	B. E.,	Burlington, N. C.
With Gilbert C. White.		
Claude Milton Lambe,	B. E.,	Durham, N. C.
Mercantile Business.		

Name.	*Degree.*	*Address.*
CHARLES EDWARD LATTA,	B. E.,	Raleigh, N. C.
Grocer.		
DAVID LINDSAY,	B. E.,	Draper, N. C.
Working through mill, German-American Co.		
JOHN HENRY LITTLE,	B. E.,	Waycross, Ga.
Engineer in Power Plant, A. C. L. Railway.		
GEORGE LAFAYETTE LYERLY,	B. E.,	Hickory, N. C.
Shuford Hardware Co.		
CLARENCE TALMAGE MARSH,	B. E.,	Fort McKinley, Me.
Second Lieutenant U. S. Army.		
DAVID JOHN MIDDLETON,	B. Agr.,	Wilmington, N. C., R. 1.
Superintendent of Farm D. L. Gore.		
BENJAMIN FRANKLIN PITTMAN,	B. E.,	Richmond, Va.
Virginia Passenger and Power Co.		
LAWRENCE LYON PITTMAN,	B. E.,	Whitakers, N. C.
RUBLE ISAAC POOLE,	B. E.,	Ithaca, N. Y.
Student Cornell University.		
HARRY ALEXANDER POWELL,	B. E.,	Wake Forest, N. C.
Royall Cotton Mill.		
JAMES ALEXANDER POWELL,	B. E.,	Raleigh, N. C.
Draftsman H. P. S. Keller, Architect.		
THOMAS MILTON POYNER,	B. E.,	Moncure, N. C.
Civil Engineer Seaboard Air Line Railway.		
EDGAR ENGLISH SMITH,	B. E.,	San Juan, Porto Rico.
Deck Officer U. S. Coast and Geodetic Survey.		
JAMES LAWRENCE SMITH, JR.,	B. E.,	Dublin, Ga.
With Crafts & Smith, Bridge Contractors and Civil Engineers.		
JESSE PAGE SPOON,	B. Agr.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
JOHN SNIPES STROUD,	B. E.,	East Durham, N. C.
Erwin Cotton Mill.		
JOHN LAWRENCE VON GLAHN,	B. E.,	West Raleigh, N. C.
Instructor N. C. College of Agriculture and Mechanic Arts.		
ROYALL EDWARD WHITE,	B. E.,	Aulander, N. C.
JOHN C. WILLIAMS,	B. E.,	Hazlehurst, Ga.
Bridge Construction Georgia and Florida Railroad.		
WOODFIN BRADSHER YARBROUGH,	B. E.,	Locust Hill, N. C.
JOHN FRANKLIN ZIGLAR,	B. E.,	Winston-Salem, N. C.
Transitman J. N. Ambler.		

THE

NORTH CAROLINA COLLEGE

OF

Agriculture and Mechanic Arts

WEST RALEIGH

1909-1910

OCTOBER 3. 1889.

RALEIGH
Edwards & Broughton Printing Co., State Printers and Binders
1910

CALENDAR

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College Calendar.

1910.

Thursday,	July	14,	Entrance examination at each county court-house, 10 A. M.
Wednesday,	September	7,	Entrance examination at the College, 9 A. M.
Thursday,	September	8,	First Term begins; Registration Day.
Saturday,	September	10,	Examinations to remove Conditions.
Thursday,	November	24,	Thanksgiving Day.
Wednesday,	December	21,	First Term ends.

1911.

Wednesday,	January	4,	Second Term begins; Registration Day.
Saturday,	March	18,	Second Term ends.
Monday,	March	20,	Third Term begins.
Sunday,	May	28,	Baccalaureate Sermon.
Monday,	May	29,	Alumni Day. Annual Oration.
Tuesday,	May	30,	Commencement Day.

Board of Trustees.

Name.	*Post-office.*	*Term Expires.*
C. W. Gold	Raleigh	May 1, 1911.
E. M. Koonce	Jacksonville	May 1, 1911.
T. W. Blount	Roper	May 1, 1911.
D. A. Tompkins	Charlotte	May 1, 1911.
J. T. Ellington	Smithfield	May 1, 1913.
W. E. Daniel	Weldon	May 1, 1913.
W. H. Ragan	High Point	May 1, 1913.
W. B. Cooper	Wilmington	May 1, 1913.
M. B. Stickley	Concord	May 1, 1915.
T. T. Ballenger	Tryon	May 1, 1915.
N. B. Broughton	Raleigh	May 1, 1915.
O. L. Clark	Clarkton	May 1, 1915.
Everett Thompson	Elizabeth City	May 1, 1917.
R. H. Hicks	Rocky Mount	May 1, 1917.
O. Max Gardner	Shelby	May 1, 1917.
M. L. Reed	Biltmore	May 1, 1917.

Faculty and Officers.

DANIEL HARVEY HILL, A.M., Lit.D., President.

WALLACE CARL RIDDICK, A.B., C.E., Professor of Civil Engineering and Vice-President.

WILLIAM ALPHONSO WITHERS, A.M., Professor of Chemistry.

FRANK LINCOLN STEVENS, M.S., Ph.D., Professor of Botany and Vegetable Pathology.

ROBERT E. LEE YATES, A.M., Professor of Mathematics.

THOMAS NELSON, Professor of Textile Industry.

JOHN SOMERVILLE EATON YOUNG, First Lieutenant U. S. A., Professor of Military Science and Tactics.

CLIFFORD LEWIS NEWMAN, M.S., Professor of Agriculture.

JOHN MICHELS, B.S.A., M.S., Professor of Dairying and Animal Husbandry.

WILLIAM HAND BROWNE, Jr., A.B., Professor of Physics and Electrical Engineering.

HOWARD ERNEST SATTERFIELD, M.E., Professor of Mechanical Engineering.

THOMAS PERRIN HARRISON, Ph.D., Professor of English.

GUY ALEXANDER ROBERTS, B.S., D.V.S., Professor of Veterinary Science and Physiology.

IRA OBED SCHAUB, B.S., Professor of Agricultural Extension.

FRANK C. REIMER, M.S., Associate Professor of Horticulture.

BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

CARROLL LAMB MANN, B.S., C.E., Assistant Professor of Civil Engineering.

GEORGE SUMMEY, JR., Ph.D., Assistant Professor of English.

RALPH INGRAM SMITH, B.S., Assistant Professor of Zoology and Entomology.

WELDON THOMPSON ELLIS, B.E., M. E., Assistant Professor of Machine Design and Steam Laboratory.

LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D., Assistant Professor of Chemistry.

HENRY K. McINTYRE, E.E., Assistant Professor of Physics and Electrical Engineering.

CHARLES BENJAMIN PARK, Instructor in Machine Shop and Assistant in Power Plant.

CLARENCE ANDREW SPRAGUE, B.S., Instructor in Physics.

JOHN STRAUCHON JEFFREY, Instructor in Poultry Husbandry.

ABRAHAM RUDY, A.M., Pd.D., Instructor in Modern Languages.

WILEY THEODORE CLAY, B.E., Instructor in Wood-working and Pattern-making.

MICHAEL RALPH RICHARDSON, A.M., Instructor in Mathematics.

JOHN EDWARD HALSTEAD, B.S., Instructor in Dyeing.

HUBERT HILL, B.S., M.S., Instructor in Chemistry.

JOHN LAWRENCE VON GLAHN, B.E., Instructor in Mathematics and Civil Engineering.

JOHN GALENTINE HALL, A.M., Instructor in Biology.

PERCY LEIGH GAINEY, B.Agr., Assistant in Bacteriology.

HERBERT NATHANIEL STEED, Instructor in Weaving and Designing.

ROBERT PEACHY LATANÉ, B.S., Instructor in Physics.

WILLIAM MEADOR LUNN, M.S., Instructor in Agriculture.

WAYNE ARINGTON HORNADAY, B.S., Laboratory Assistant in Anatomy and Physiology.

JACOB OLIN FAULKNER, B.A., Instructor in English.

LLOYD B. SELBY, M.E., Instructor in Drawing.

JOHN ALLEN AREY, B.S., Instructor in Animal Husbandry.

SAMUEL FATIO STEPHENS, B.E., Instructor in Civil Engineering.

FRED BARNET WHEELER, Instructor in Forge.

WILLIAM FLAUD MORRIS, B.E., Instructor in Shop and Drawing.

BURTON JUSTICE RAY, A.B., Ph.D., Instructor in Chemistry.

LEWIS REINHOLD DETJEN, B.S.A., Instructor in Horticulture.

JOHN WILLIAM HARRELSON, B.E., Instructor in Mathematics.

BASCOMBE BRITT HIGGINS, B.S., Instructor in Biology.

OFFICERS.

EDWIN BENTLEY OWEN, B.S., Registrar.
ARTHUR FINN BOWEN, Bursar.
BENJAMIN SMITH SKINNER, Farm Superintendent.
JAMES OLIVER LOFTIN, Steward.
MISS ELSIE LANIER STOCKARD, Librarian.
MRS. ELLA HARRIS, Hospital Matron.
MISS ISABEL BRONSON BUSBEE, Stenographer.
HENRY McKEE TUCKER, M.D., Physician.

NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION DEPARTMENT, WEST RALEIGH.

DANIEL HARVEY HILL, A.M., Lit.D., President.
CHARLES BURGESS WILLIAMS, M.S., Director and Agronomist.
WILLIAM ALPHONSO WITHERS, A.M., Chemist.
FRANK LINCOLN STEVENS, Ph.D., Vegetable Pathologist.
JOHN STRAUCHON JEFFREY, Poultryman.
FRANK CHARLES REIMER, M.S., Horticulturist.
ROBERT SETH CURTIS, B.S., Animal Husbandman.
JOHN MICHELS, M.S., Dairy Husbandman.
RALPH INGRAM SMITH, B.S., Entomologist.
GUY ALEXANDER ROBERTS, D.V.S., Veterinarian.
JOHN GALENTINE HALL, A.M., Assistant in Plant Diseases.
WILLIAM CARLYLE ETHERIDGE, B.Agr., Assistant Agronomist.
BURTON JUSTICE RAY, A.B., Ph.D., Assistant Chemist.
ALEXANDER RICHARDSON RUSSELL, Assistant in Field Experiments.
PERCY LEIGH GAINEY, B.Agr., Assistant in Bacteriology.
LEWIS REINHOLD DETJEN, B.S.A., Assistant in Horticulture.
FRANCIS WEBBER SHERWOOD, B.S., Assistant Chemist.
ARTHUR FINN BOWEN, Bursar.
CRAVEN PEARCE FRANKLIN, Secretary and Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

First Lieutenant, John S. E. Young, U. S. Army.

Cadet Major.

C. R. JORDAN.

Battalion Staff.

W. L. MANNING, First Lieutenant and Adjutant.
L. L. HOOD, First Lieutenant and Quartermaster.

Noncommissioned Staff.

J. T. PEDEN, Sergeant-Major.
J. L. MARTIN, Quartermaster Sergeant and Color Sergeant.
C. A. SPEAS, Chief Trumpeter.

Band.

C. E. WALTON, Captain.
I. N. TULL, First Lieutenant.
W. E. DAVIS, Second Lieutenant.
W. R. PHILLIPS, Second Lieutenant.
E. LEE, Second Lieutenant.
O. M. SIGMON, First Sergeant.
R. T. WADE, Sergeant.
J. W. ROLLINSON, Sergeant.
L. E. STEERE, Sergeant.
E. R. McCRACKEN, Sergeant.
D. R. HINKLE, Sergeant.
J. G. MATTHEWS, Corporal.
J. E. McGEE, Corporal.
C. M. TAYLOR, Corporal.
H. P. MURRAY, Corporal.

Company A.

T. B. SUMMERLIN, Captain.
R. E. GILL, First Lieutenant.
M. S. MAYES, Second Lieutenant.
L. D. MOODY, Second Lieutenant.
W. H. DAVIS, First Sergeant.
J. P. QUINERLY, Sergeant.
J. H. BROWN, Sergeant.
T. C. BARBER, Sergeant.
C. A. DUKES, Sergeant.
P. B. FEREBEE, Corporal.
J. R. MULLEN, Corporal.
T. B. WILLIAMS, Corporal.
J. C. SMALL, Corporal.
R. W. HOWELL, Corporal.
O. W. SMITH, Corporal.
A. H. BOND, Corporal.

Company B.

J. F. ROBINSON, Captain.
T. H. THOMPSON, First Lieutenant.
E. L. WINSLOW, Second Lieutenant.
J. L. SPRINGS, Second Lieutenant.
F. T. PEDEN, First Sergeant.
M. F. WYATT, Sergeant.
WILLIAM BAILEY, Sergeant.
E. M. EVANS, Sergeant.
K. BRYAN, Sergeant.
H. M. WALTON, Corporal.
A. L. FAULKNER, Corporal.
S. T. MITCHINER, Corporal.
E. L. SHERLOCK, Corporal.
R. C. DEAL, Corporal.
H. B. MERCER, Corporal.
B. L. CALDWELL, Corporal.
C. HORN, Corporal.

Company C.

E. A. SEIDENSPINNER, Captain.
R. L. MORGAN, First Lieutenant.
H. W. WELLES, Second Lieutenant.
R. BOWDITCH, Second Lieutenant.
G. W. GILLETTE, First Sergeant.
J. M. BEAL, Sergeant.
RUFUS BOYLAN, Sergeant.
C. E. BELL, Sergeant.
P. N. PITTENGER, Sergeant.
C. A. STEDMAN, Sergeant.
F. B. SHERWOOD, Corporal.
J. M. HARDEN, Corporal.
C. W. LEE, Corporal.
H. B. TICE, Corporal.
T. B. COOPER, Corporal.
C. M. NEWCOMB, Corporal.
P. CALDWELL, Corporal.

Company D.

W. M. NEALE, Captain.
W. H. CROW, First Lieutenant.
T. S. BOND, Second Lieutenant.
C. B. STAINBACK, Second Lieutenant.
F. G. TUCKER, First Sergeant.
W. P. SUGG, Sergeant.
E. WADSWORTH, Sergeant.
C. L. CRUSE, Sergeant.
T. D. HARRIS, Sergeant.
V. P. BYRUM, Sergeant.
J. C. COSBY, Corporal.
M. F. SUGG, Corporal.
S. B. HOWARD, Corporal.
J. G. KELLOGG, Corporal.
H. P. WHITTED, Corporal.
J. E. BEAMAN, Corporal.

NOTE.—On October 20, 1903, the Battalion held a competitive drill on the Fair Grounds track, during the State Fair, and Company C, Corps of Cadets, was selected as the best drilled organization and awarded the College pennant.

General Information.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890 and the "Nelson Act" of 1907 and by State appropriations.

The College is beautifully located on the extension of Hillsboro street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns six hundred and eighty-five acres of land. Fifteen hundred young trees and nine hundred and forty vines are growing in an orchard of sixteen acres. Seven acres are devoted to truck-growing. The campus consists of about thirty acres of rolling land, which is being improved as rapidly as circumstances permit.

BUILDINGS.

The Administration Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Registrar, and the Bursar, several recitation rooms and the chemical and physical laboratories. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for drawing-rooms and laboratories by the Department of Civil Engineering.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to a cotton mill, and is an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall was named in honor of the late R. Stanhope Pullen, the greatest benefactor of the College. The basement of this building is used as a dining room and seats five hundred students. The first story is used for library, reading room and lecture rooms. The second story serves as the College auditorium. This building is commodious, comfortable and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings and is two hundred and four by seventy-four feet. The lower or basement floor contains the class rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making and stock judging. The second floor contains the offices of the department, class rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery. On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class rooms and large, well-lighted laboratories. The building affords excellent accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

The Foundry is a one-story brick building with a brick stack. It contains a 36-inch cupola furnace, Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven; benches and hand tools for moulding in the course of exercises, as well as for any repair work for the College.

The Electric Laboratory is a one-story brick building. It is equipped with modern electrical apparatus for the use of the Junior and Senior classes.

Dormitories.—The College has the following dormitories:

1. Watauga Hall, a three-story brick building, trimmed with brownstone and containing sixty rooms. In the basement there are bath rooms for the students.

2. In 1909 a large three-story brick dormitory was finished. This building is two hundred and twenty-five feet long by fifty-two deep. It is divided by fire walls into sections of twelve rooms each. It furnishes room for one hundred and thirty students. This dormitory is also supplied with a large and convenient bath room.

3. In addition to these two large buildings four other brick buildings are set apart exclusively for student homes. One of these is a three-story building: three are two-story buildings.

All of the dormitories are lighted by electricity and heated by steam.

Barns.—Two large barns are a part of the agricultural equipment. One of these is used for the herd of cows. It is a modern sanitary barn, equipped with the James Sanitary Fixtures and admirally lighted and ventilated. The other is for the work animals and for storage.

The Infirmary is a two-story brick building, containing a sitting-room, seven bed-rooms, three bath-rooms, a kitchen, linen-room, College Physician's office and medicine closet. The rooms are large, well ventilated, well lighted, and heated by steam. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

A Central Power Plant furnishes heat, light, and power for all the buildings and is also used for instructive work. The boiler plant consists of two 75-horse-power Babcock and Wilcox Company and two 100-horse-power Atlas Water-Tube Boilers, with a working steam pressure of 150 pounds. The Engine Plant consists of a 100-horse-power Skinner Engine and Crocker-Wheeler Generator attached; a 100 K. W. De Laval Turbine Generator set with self-exciter; a 10 K. W. steam-driven Exciter Set. Steam, and Vacuum Pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren Webster system of heating.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, stand-pipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the Agricultural Building and the laboratories are in the same building and in the administration building at the College. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering quesions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in many lines of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill-workers, manufacturers, stock raisers, fruit growers, truckers, and dairymen, by giving them not only a liberal but also a special education. with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Agriculture. It also offers practical training in Carpentry, Wood-turning, Blacksmithing, Machinists' Work, Mill-work, Boiler-tending, Engine-tending, Dynamo-tending and Installation, Electric-light Wiring, Armature Winding and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, History, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week or month.

Students can not properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette-smoking, drinking, gambling, card-playing, visiting pool-rooms and all improper places, loafing on the streets, and other like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; his failure to perform duty and his infractions of the rules. When this record shows that a young man is not in College for the purpose of getting an education, and is not using his opportunities properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed. The rules of the College are intended solely to promote manliness, to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

Every effort is made to develop strong, intelligent, and high natured men, and proper patience, sympathy, and forbearance are exercised in trying to bring about this great result, but the College will not retain a young man who continues idle, vicious, or incompetent.

PRIZES.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

Mr. William Dunn, of New Bern, North Carolina, gives annually a twenty-five-dollar gold medal to the Senior speaker who makes the best oration on Commencement Day.

HAZING.

There has been no hazing of any sort in College for two years. The present sentiment of the student body is opposed to this practice in our College, and its management feels sure that there will be no hazing during the next year.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself nor to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization among the students for the purpose of centralizing and directing the moral and religious life of the student body. The work is under the direction of a General Secretary, who is employed to give his entire time to the work, and the following student officers: President, vice-president, corresponding and recording secretaries, and treasurer.

Membership is open to all college students of good moral character. Only members of evangelical churches may become active members.

A hand-book, giving general information about the college, is published each spring and sent to prospective students with a personal letter of welcome from the officers of the Association.

A large number of men is trained each year in active Christian service through membership on the following committees, all of which are trained by the General Secretary in their particular work: Bible Study Committee, which has charge of the organization of voluntary Bible Study classes among the students, and in this way seeks to reach the non-Christian element of the student body; Mission Study Committee, which provides for Mission Study among the students; Membership Committee, which seeks to enlist students as members of the Young Men's Christian Association; Social Committee, which provides means of social entertainment and diversion; and Finance Committee. Each of these committees is held responsible for its part of the Association activities.

The Association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership fees. Although membership is voluntary, it is designed that all students should apply for membership and thereby align themselves with an organization which will assist them in leading an upright life while in College.

The Association maintains headquarters in a room in the Main Building, which is fitted up with reading matter, small games, etc., and serves as an office for the General Secretary. A suitable building with all modern equipments is soon to be erected by the Association.

Any further information may be obtained by addressing the General Secretary, Y. M. C. A., West Raleigh, N. C.

ATHLETICS.

The College is provided with extensive grounds, which furnish ample facilities for military drill and athletic sports.

Outdoor sports are directly managed by the Athletic Association and are under the control of a committee of the Faculty.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty, it promotes practice in base-ball, basket-ball, foot-ball, track athletics, etc.

The Athletic Park is situated in the center of the College buildings. It is provided with a grand-stand and uncovered seats and meets amply the needs of the various athletic teams.

LIBRARY AND READING-ROOMS.

The College Library occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about six thousand five hundred volumes. There are also reference libraries in the different departments. The library is kept open from 9 a. m. to 6 p. m. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about ten thousand volumes, is free to the students and they have the privilege of borrowing books from it. Students also have the privilege of consulting books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical problems. The meetings are conducted in the manner of a Farmers' Institute and give training in conducting farmers' meetings, ex tempore speaking on agricultural questions, and writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and obsrvations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every two weeks for the discussion of mechanical subjects. The society is composed of Seniors and Juniors taking the Mechanical Engineering Course. Its work has proved very beneficial to its members.

Electrical Society.—A student branch of American Institute of Electrical Engineers has been organized and holds regular meetings to read and discuss the papers presented before the Institute, and to hear original papers prepared by its own members or by visiting engineers.

The Vorwaerts Verein (Forward Society) is a society for the promotion of interest in the study of German. Weekly meetings are held at which literary programs are carried out in the German language. giving its members practice in expressing themselves in that language. Memberships is open to students and members of the faculty who have acquired sufficient knowledge of the German language to understand simple conversation in it.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar, Analysis and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-years courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the same examination as for the two-year course.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each courthouse in the State at 10 o'clock a. m. the second Thursday in July of each year. The date for 1909 is July 14th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or there should not be room enough for him in the College. Entrance examinations will be held also at the College at 9 o'clock a. m. on Wednesday preceding the opening day. The examinations begin with English at 9 a. m., in Room 21, Main Building, followed by Mathematics at 11, and History at 2, in the same room. The date for 1910 is September 7th.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, over eighteen years of age.

2. School teachers holding teachers' certificates, if the holders are sufficiently familiar with Algebra.

3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00.

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies should be kept within reasonable bounds. From $50.00 to $100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship, amount to from $275.00 to $325.00 for the entire session; or $230.00 to $280.00, if he has a scholarship.

Detailed Information.

The largest payment is made in September. On entrance a student will need $80.00 to meet all of his various payments for the first month. But of this amount, the payment of $22.50 for tuition may be deferred, if desired, to the first of November. This will reduce the first, or entrance, payment to $57.50. This amount includes payment to the College, $45.00; deposit with the dealer for uniform and cap, $5.00, and for the purchase of books and incidentals, $7.50. In the case of day students, or students rooming and boarding out of College, tuition will be paid on entrance.

Board is $10.00 per month, payable in advance on the first day of each calendar month from September through May. Board for less time than one month is charged for at the rate of fifty cents a day, or $3.00 per week. Refunds for board will be made on the basis of these charges.

Students withdrawing from College within two weeks from date of entrance will be refunded all money paid by them to the College Bursar except charges for board and lodging during the time they are in College. In special cases the right is reserved to modify or to entirely revoke this rule.

Refunds to students withdrawing later than two weeks from date of entrance will be made in proportion to the length of time they are in College. The right in special cases to modify or to revoke this rule is reserved.

Note.—The College Bursar is forbidden by the Trustees to give credit.

EXPENSE BY MONTHS.

The following is a statement of the College expenses of a Freshman student by months:

September: Room rent, fuel and lights, $15.00; incidental fee, $5.00; medical and hospital fee, $3.00; lecture fee, $1.00; library fee, $1.00; furniture fee, $1.00; physical culture fee, $1.00; military equipment deposit $5.00; mechanical and physical laboratory fees $3.00; board for September, $10.00; a total of $45.00. Tuition for one half session, $22.50, may be paid at this time, which will make a total of $67.50. In addition, there is required by the merchant a deposit of $5.00 for uniform and cap when the measure of the student is taken; and from $5.00 to $10.00 is required to buy books, drawing instruments, and for incidentals. An Agricultural Freshman pays $1.00 less than the above. A Textile Freshman pays $2.00 more than the above.

October: Board, $10.00, and balance to merchant for uniform and cap, $15.00.

November: Board, $10.00; tuition, if it was not paid in September, $22.50.

December: Board, $10.00.

January: Tuition, $22.50; lodging and fuel and lights, $15.00; medical and hospital fee, $3.00; furniture fee, $1.00; physical culture fee, $1.00; board, $10.00. A total of $52.50.

February: Board, $10.00.

March: Board, $10.00.

April: Board, $10.00.

May: Board, $10.00.

If the student has a scholarship, he does not pay tuition.

The amount of the September, or entrance payment, for students in other than Freshman Classes, varies slightly with the class and the course; caused by the additional collection of fees and deposits for laboratory work and for supplies. The amount of these fees and deposits is given in the table, on the following page, for all classes and courses:

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students ...	$ 10.00	$ 5.00	$ 4.00	Given on page 23	$.........	$ 1.00
C. E. " ..	1.00	1.00	4.00		....	....
M. E. " ..	2.00	3.00	6.00		2.00	2.00
E. E. " ..	3.00	3.00	6.00		....	....
Chem. " ..	10.00	6.00	4.00		....	....
Tex. " ..	9.00	8.00	8.00		6.00	7.00

Work-course students in Agriculture pay $1.00 for shop and 50 cents for Biological laboratory.

A fee of $1.50 will be collected from short-course students in dairying, agriculture, etc. for hospital and medical attention.

All unused deposits are refunded to the student at the end of the session or upon his withdrawal from College. If he has overdrawn his deposit, he is required to pay the amount of the overdraft.

ROOM FURNITURE.

The College rooms are supplied with necessary furniture. Each student, however, should bring with him two pairs of blankets, two pairs of sheets, one pillow and cases, and two bedspreads for a single bed.

Overcoats may be brought from home, or purchased in the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Some students who are alert and energetic frequently earn part of their expenses in College. Some of the agricultural students find work at odd hours on the farm, in the orchard, in the barn, in the dairy. Some students act as agents for laundries, for furnishing-houses, for pressing clubs. The College employs a few students for the dining-room and for other purposes. A student's ability to keep himself will depend largely on his own power to find work and to hold it after he finds it. It must, however, be remembered that the duties of the class room take most of a student's time, and his hours for remunerative work are therefore limited.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $2,900.97.

BOARD AND LODGING.

All students are expected to board in the College mess-hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillowcases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

DRILL.

In return for the Morrill Fund of the United States government, the College is under contract to require its students to drill at least three times each week and an army officer is detailed to conduct the drills. No student will be excused from drill unless the College Physician, after examination, deems him unfit for military duty.

UNIFORM.

The College uniform must be worn by all students when they are on military duty. It must be bought at the College from the regular contractor. The uniform is of strong gray cloth and with proper care should last one or two years.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College physician visits the Infirmary daily at 3 o'clock p. m., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

VACCINATION.

By direction of the Trustees no young man will be registered unless he has been vaccinated. The College greatly prefers that all applicants for admission should be vaccinated at home, and that a certificate of successful vaccination be brought from the family physician. In case this cannot be done, the College physician will vaccinate applicants before they are registered at College. A blank form to be filled by the home physician will be mailed on application.

Courses of Instruction.

The College offers the following courses of instruction:

I. Four-year Courses.

1st. Agriculture (including Agriculture, Horticulture, Veterinary Science, Biology, and Agricultural Chemistry).

2d. Engineering (including Civil Engineering, Mechanical Engineering. Electrical Engineering, and Chemistry).

3d. Textile Industry or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate of the four-year course in Agriculture, in Chemistry, or in Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. Short Courses of one year, and two years (work course), in Agriculture, and of two years in Textile Industry, in the Mechanic Arts, (including Carpentry, Woodturning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. Winter Courses in Agriculture and Dairying and in Textile Industry. beginning at the opening of College in January and lasting seven weeks. A one-week's course in Agriculture, beginning with the opening of the Winter Term.

IV. Normal Courses for the training of teachers along industrial lines.

V. Graduate Courses, extending over two years and leading to advanced degrees, are intended for students who have completed the Four-year Courses and who desire further instruction and training along special lines.

School of Agriculture.

a. The Four-year Course in Agriculture.
b. The One-year Course in Agriculture.
c. The Seven-weeks Course in Agriculture and Dairying.
d. The One-week Course.
e. The May School for Teachers.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers five distinct courses:

a. The Four-year Course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of such studies as Mathematics, English Literature, Physics, etc., and they are not neglected in this course. **Full description of the Four-year Course begins on page 30.**

b. The One-year Course is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited, hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course. The One-year Course is described on page 99.

c. The Seven-weeks Winter Course is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention. The Seven-weeks Course is described on page 102.

d. The One-week Course precedes the seven-weeks course and is devoted entirely to the study of corn, from the preparation of the soil to the marketing of the crop. Emphasis is given soil preparation, rotation, fertilizaton, cultivation, seed selection, insect pests, diseases, etc. The One-week Course is described on page 101.

f. The May School is intended to meet the need of teachers who wish to make themselves more proficient in Agriculture and nature study. The May School Course is described on page 122.

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices on yield and on fertility, in varieties of fruit. of vegetables and of forage crops. The methods employed and the results obtained are freely used for instruction.

1. Four-year Course in Agriculture.

This Course leads to the Degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK. *		
	1st Term.	2d Term.	3d Term.
Agriculture, 1†	1	--	2
Dairying, 26	5	--	--
Animal Physiology, 40	3	3	3
Poultry Husbandry, 31	--	3	3
Botany, 50	3	3	3
Wood-work, 90	--	2	2
Algebra, 100	5	3	--
Geometry, 101	--	2	5
English, 110	3	3	3
Military Drill, 140	3	3	2

Sophomore Year.

Farm equipment, 2	4	--	--
Live Stock, 20	--	2	3
Vegetable Gardening, 10	--	5	1
Plant Diseases, 52	3	--	--
Systematic Botany, 51	--	--	3
Zoology, 60	2	2	--
Economic Entomology, 61	--	--	3
Inorganic Chemistry, 70	3	3	3
Inorganic Chemistry (laboratory), 71	2	2	2
Elementary Physics, 80	2	2	2
American Literature, 111	3	3	3
Military Tactics, 150	1	1	1
Military Drill, 140	3	3	2

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* The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

† The figures immediately following the name of the study are given to aid one in finding readily a description of the study. Under each department a number precedes the description of the study.

Junior Year.

(At least 19 periods a week required, in addition to military drill.)

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Crops, 3	--	4	5
Geology, 65	4	--	--
Soils, 66	--	2	2
Agricultural Chemistry, 72	2	2	2
Bacteriology, 54	2	2	2
Economic Entomology, 61	2	--	--
Advanced Rhetoric, 112	2	2	--
Public Speaking, 113	--	--	2
Economics, 130	1	1	1
Military Drill, 140	3	3	2
Elect six additional periods	6	6	6

Junior Elective Subjects.

Advanced Stock Judging, 23	2	--	--
Animal Breeding, 21	--	3	--
Stock Feeding, 22	--	--	4
Veterinary Medicine, 41, a b c	4	3	3
Fruit Culture, 11	4	4	--
Landscape Gardening, 12	--	--	3
German, French and Spanish	3	3	3

Prerequisites to Senior Courses.

Agronomy Division.

Fruit Culture, 11.
Landscape Gardening, 12.

Animal Husbandry Division.

Stock Judging, 23.
Animal Breeding, 21.
Stock Feeding, 22.
Veterinary Medicine.

Horticultural Division.

Fruit Culture, 11.
Landscape Gardening, 12.

Normal Division

Fruit Culture, 11.
Landscape Gardening, 12.

Senior Year.

(At least 22 periods a week of work to be carried.)

Agronomy Division.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Management, 5	--	2	2
Special Crops, 4	5	6	3
Plant Breeding, 13	3	--	--
Poultry Husbandry, 32	--	--	3
Live Stock Management, 24	3	3	3
Plant Diseases, 53	2	2	2
English, 114	3	3	3

Horticultural Division.

Farm Management, 5	--	2	2
Special Crops, 4	5	3	3
Plant Breeding, 13	3	--	--
Horticulture, 14, 15, 16	2	5	5
Plant Diseases, 53	2	2	2
Entomology, 62	2	2	2
English, 114	3	3	3

Animal Husbandry Division.

Farm Management, 5	--	2	2
Special Crops, 4	5	3	--
Live Stock Management, 24	3	3	3
Advanced Dairying, 27	3	--	3
Dairy Bacteriology, 56	--	3	--
Poultry Husbandry, 32	--	--	3
Veterinary Medicine, 42	3	3	3
English. 114	3	3	3

Normal Division.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Management, 5	--	2	2
Special Crops, 4	5	3	--
Live Stock Management, 24	3	3	3
Poultry Husbandry, 32	--	--	3
Plant Diseases, 53	2	2	2
English, 114	3	3	3

Elective.

Chemistry	3	3	3
Histology, 43	4	4	4
Entomology, 62	2	2	2
Bacteriology, 55	3	3	3
German, 120, Spanish and French	3	3	3
Cheese Making, 28	--	5	--
Military Drill, 140	3	3	2

Four-year Course in Agriculture.

EQUIPMENT.

In addition to Agricultural Hall, with its class rooms, laboratories, dairy, stock judging room and offices, the College possesses the following equipment for instruction in Agriculture:

The farm includes six hundred and eighty-five acres with two hundred and sixty acres under cultivation; a two-story sixteen-stall horse and storage barn; a fifty-stall dairy barn; silos with capacity for four hundred tons of silage; a No. 18 Ohio feed and ensilage cutter operated by an electric motor, and implements and machinery necessary for up-to-date farming.

The live-stock consists of the necessary horses and mules, a herd of dairy cattle and purebred swine. Breeding-stock is sold as a part of the farm products.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina; an incubator cellar with several makes of incubators; a brooder house heated by hot water and several makes of indoor and outdoor brooders. The feed room is equipped with steam engine, grist and bone mills. Ten or fifteen varieties of poultry are kept and eggs and breeding fowls sold to the public.

The horticultural equipment consists of about thirty acres in tree fruit, nuts, vineyard, berries and vegetables in appropriate assortment of classes and varieties for demonstration and instruction. These afford means for work in seed selection, bud studies, propagation, budding, grafting, transplanting, pruning, spraying, and variety study. The greenhouse affords means for starting vegetables and growing ornamental and exotic plants as well as to illustrate interesting and instructive plant life phenomena.

The dairy equipment is complete and thoroughly modern. The laboratory occupies about four thousand feet of floor space in Agricultural Hall and is equipped for instruction in farm dairying, retailing milk, creamery practice, cheese and butter-making, milk-testing, and pasteurizing. The dairy equipment is one of the most modern and complete to be found in the South.

The North Carolina Experiment Station is a department of the College and its close association with the School of Agriculture gives exceptional opportunities to the Agricultural students for instruction and observation covering experiments and research in agronomy, chemistry, horticulture, vegetable pathology, plant diseases, bacteriology, dairy and animal husbandry, poultry husbandry, veterinary science, and entomology.

AGRONOMY.

Subjects of Instruction.

1. **Agriculture.**—Elementary and popular lectures introductory to the subject of Agriculture in its broad sense. The simpler properties of soils, tillage, fertilizers, conservation of fertility, seed selection, rotation, etc., will be briefly considered by lecture and practical demonstration in the laboratory and in the field. One period first term and two periods third term. Required of Freshmen. Professor Newman.

2. **Farm Equipment.**—Lectures and recitations upon selecting, planning and equipping farms; locating, planning and erecting farm buildings; farm machinery, tools, vehicles and miscellaneous appliances; farm power; water and drainage; fences, gates and bridges; roads; dry land and wet land drainage. Four periods, first term. Required of Sophomores. Professor Newman.

3. **Farm Crops.**—Recitations and lectures upon the history, production, uses and marketing of farm crops. Exercises in the field and laboratory covering tillage, fertilization, seed selection, storage, and rotation. Weeds and their eradication. A portion of the College farm is devoted to the growing of a variety of crops for instructional purposes and each student is required to keep records of each crop covering the preparation of the soil, time of planting, quantities of seed per acre, mixing, quantities and composition of fertilizers used and the methods and times of application. Four periods, second term, and five periods, third term. Required of Juniors. Professor Newman.

4. **Special Crops.**—This course embraces advanced work in farm crops and is a continuation of the third term Junior work, but is more specialized and technical. Cotton, corn, small grain, and the principal legumes are studied in detail as well as such other crops as time will permit. Rotations and the conservation and development of fertility in connection with the use on the farm or the sale of the various crops. The principles of breeding as applied to cotton, corn and cowpeas are demonstrated on the farm that the student may become familiar with the practical details of such work. Each student is required to present a monograph on some crop or some subject of close relationship to important crops of the State. In agronomy division, five periods, first term; six periods, second term, and three periods, third term. In Horticultural division, five periods, first term, and three periods each in second and third terms. In Animal Husbandry and Normal divisions, five periods, first, and three periods, second term. Required of Seniors. Professor Newman.

5. **Farm Management.**—Comparisons of types of farming and their relation to climate and soil; labor, transportation and population;

capital and land value; operating expenses; systems of land tenure; farm organization; size of farms; location and arrangement of buildings, roadways, fences, water supply; orchard, garden, etc. Factors governing nature and amount of equipment; financial accounts; farm records; diversification, rotation from business point of view; cropping systems; interrelationship of animal and plant production; maintenance of fertility; standard of living; schools; churches. Two periods, second and third terms. Required of Seniors. Professor Newman.

HORTICULTURE.

Equipment.

The Horticultural Department occupies rooms in the Agricultural Building, including class rooms, laboratory, vegetable and fruit cold storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and many exotic plants; a large amount of laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as apparatus for seed-testing, budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The following horticultural grounds are available to students for such work as planning a fruit plantation, distances of planting, cultivating, pruning, spraying, fruit bud studies, species and varieties of fruits:

An extensive orchard bearing the most important varieties of North Carolina fruits. This includes the apple, pear, plum, peach, cherry, persimmon, apricot, fig, pecan, quince, and raspberry.

Two complete vineyards containing the leading standard varieties of the Labrusca, Rotundifolia, and Æstivalis species, together with a large number of promising new hybrids.

A nursery which is devoted to the growing of seedling trees and the practices of plant propagation such as budding, and grafting.

The department has charge of ten acres of land, which is devoted entirely to the raising of vegetables. These grounds are used for demonstration purposes in vegetable gardening, illustrating the principles and methods used in modern trucking and market gardening industries of the State.

The College campus is used in teaching ornamental gardening and a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

10. **Vegetable Gardening and Plant Propagation.**—This course deals with the selection and preparation of soils for vegetables; fertilizers and manures; handling of seeds, planting and transplanting; constructing of hot beds and cold frames; culture, harvesting and storing of all important vegetables. Special stress is laid on the home garden and the trucking industry in this State. The work in plant propagation includes such work as layering, cuttings, grafting, and budding. Five periods, second term, and one period, third term. Required of Sophomores. Mr. Detjen.

11. **Fruit Culture.**—A course treating of the location of orchards, soils for fruits, varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include a study of species and varieties of fruits and nuts, fruit buds, and exercises in pruning trees, shrubs, and vines. Four periods, first and second term. Required of Juniors in the Agricultural, Horticultural and Normal Divisions. Associate Professor Reimer.

12. **Landscape Gardening.**—This course deals with the planning, arrangement and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees, and shrubs, flowers and flower beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Three periods, third term. Required of Juniors in the Agricultural, Horticultural or Normal divisions. Associate Professor Reimer.

13. **Plant Breeding.**—A course dealing with the fundamental laws and principles of plant breeding, such as variation, mutations, heredity, Mendel's law; crossing, selection, origination and improvement of varieties. Three periods, first term. Required of all Seniors in the Horticultural and Agronomy Divisions. Associate Professor Reimer.

14. **Marketing.**—An advanced course dealing with the harvesting, grading, packing, storing, transporting, and selling of fruits and vege-

tables. Two periods, first term. Required of Seniors in the Horticultural Division. Mr. Detjen.

15. **Pomology.**—An advanced course dealing with the origin and development, adaptation, and improvement and breeding of fruits. Five periods, second term. Required of Seniors in the Horticultural Division. Associate Professor Reimer.

16. **Horticulture.**—During the last term each student will take up some special phase of horticultural work that he expects to give special attention to after leaving college. Each student will be dealt with individually. He will be required to make a thorough study of the latest experiment station work on his particular subject. Five periods, third term. Required of Seniors in the Horticultural Division. Associate Professor Reimer.

ANIMAL HUSBANDRY.

20. **Live Stock.**—The origin, history and characteristics of the several breeds of live stock are studied by the students. Where possible actual specimens are used to show the breed characteristics, and where representative animals can be found within a reasonable distance, the student is permitted to visit such places. This enables the student to determine the breeds best adapted to the different conditions and environments. Practical exercises are given in live-stock judging. The student is required, after familiarizing himself with the points of the score-card, to study the various classes of farm animals in relation to the purposes for which they are designed. The animals are compared and placed according to their relative merits, after which the reasons for so doing are written on blank forms furnished the student. Two periods, second term, and three periods, third term. Required of Sophomores. Professor Michels.

21. **Animal Breeding.**—Upon the proper methods of breeding and management depends the success or failure in raising improved types of farm animals. To this end the student is taught the underlying principles of laws which govern the successful breeding and improvement of the various classes of live-stock. The experience and observation of our more successful husbandmen will constitute the foundation of this work. Lectures and recitations. Three periods, second term. Required of Juniors in Animal Husbandry Course; elective in other courses. Professor Michels.

22. **Stock Feeding.**—The course in stock feeding includes a study of the physiology of the digestive system, also the best methods involved in raising and maturing farm animals for their respective uses. The feeding of the various classes of animals will be studied,

and most profitable methods of feeding and management during the different periods of growth. The chief object of the course is to acquaint the student with the fundamental principles of stock feeding, after which the practical side of the question will be considered, enabling him to compound rations and calculate the nutritive ratios of same. Lectures and recitations. Four periods, third term. Required of Juniors. Professor Michels.

24. **Live-stock Management.**—In this course the student will be taught the proper care and management of beef and dairy cattle. Lectures on the results obtained from the most prominent breeders and fitters of beef and dairy cattle will be given. It also includes lectures and recitations on the feed, care, and management of horses, sheep, and swine in relation to the respective uses for which they are grown. Three periods. For Seniors. Professor Michels.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space on the floor of the new Agricultural Building, besides the locker-rooms and the toilet and bath-rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of De Laval, Sharples, Empire, National, United States, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk-testers; and other articles useful in doing farm dairy work.

Milk testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and also the lactometer.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle washing and sterilizing outfit.

Subjects of Instruction.

26. **Dairying.**—Text-book and lecture course, covering the fundamental principles of modern dairying. Two periods, third term. For

Freshmen. Laboratory course consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction and operation of the leading makes of separators. Proficiency is required of the students in milk testing, standardizing milk and cream, cream ripening, churning, working, packing and scoring butter. Five periods, first term. For Freshmen. Professor Michels.

27. **Advanced Dairying.**—In this course practical application will be made of the science of dairy bacteriology in its relations to cheese-making, butter-making, and the handling of milk and cream for market. Three periods, first and third terms. For Seniors. Professor Michels.

28. **Cheese-making.**—This is a lecture and laboratory course in the manufacture and marketing of the leading varieties of cheese. Elective for Seniors. Five periods, second term. Professor Michels.

POULTRY HUSBANDRY.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina, an incubator cellar with several different makes of incubators, and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, grist and bone mills.

The following varieties of poultry are kept: Barred, Buff and White Plymouth Rock; White and Buff Wyandotte; Rhode Island Red; White and Brown Leghorn; Buff Orpington, and Black Minorca.

31. **Poultry Husbandry.**—Classification and study of the breeds of domestic poultry; breeding, feeding and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. For Freshmen. Mr. Jeffrey.

30. **Poultry Husbandry.**—Theory and practice of judging fowls by score-card and comparison; comparisons of different systems of poultry keeping; artificial incubation and brooding.

Three periods, third term. For Seniors.

VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

Equipment.

For instruction in the above subjects, the department is provided with office, lecture-rooms, laboratories, pharmacy room (for drugs and surgical instruments), and dissecting room.

The office contains the usual office fixtures, besides a library of most of the standard works on veterinary medicine in English.

For use in class-room and laboratory, the department is supplied with mounted skeletons of man, of horse, and of cow; also numerous specimens of tumors, tuberculous organs, bony lesions of spavins, splints, ring bones and side bones.

Besides various other diseased tissues, is a large collection of parasites infesting domestic animals.

The laboratories are provided with wall cases, work tables and desks, washing sinks, hot and cold water, gas burners and electric lights.

The laboratory for special work has microtome (for cutting sections of tissues for study with microscope), glass slides, stains, and the various materials required for making permanent mounts.

The larger laboratory is supplied with the necessary equipment for conducting exercises in physiology.

In the pharmacy room are samples of a large number of drugs used in comparative medicine, and a more or less complete set of surgical instruments, including an operating table for small animals, casting harness and slings for larger animals.

DESCRIPTION OF COURSES.

40. **Animal Physiology.**—The first term's work will deal largely with a study of the structure of the body, the second and third terms' work with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating principles of physiology. Three periods. Required of Freshmen. Professor Roberts and Mr. Hornaday.

41. **Veterinary Medicine**—

(a). Veterinary Anatomy.

Text-book supplemented by lectures, illustrated by charts, models, skeletons, sketches and by dissections.

Anatomy being a fundamental subject in any system of medicine, and essential to a thorough knowledge of live-stock, the first term will be largely devoted to this study. Special attention being given to the organs of digestion and locomotion, and such other parts as are of interest to the stock farmer. One period each week will be devoted to a clinic. Four periods, first term. Elective for Juniors. Professor Roberts.

(b) Veterinary Medicine.—Lectures on the actions, uses and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Three periods, second term. Elective for Juniors. Professor Roberts.

(c). Veterinary Practice.—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and perform minor surgical operations under the direction of the instructor. Three periods, third term. Elective for Juniors. Professor Roberts.

42. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their signficance in meat and milk inspection, and also diseases attendant upon breeding animals. Three periods. Elective for Seniors. Professor Roberts.

43. Histolcgy.—A microscopical study of the tissues of the body. Treats of the cell as the unit of structure and of its functions; of tissues, their classification and relation to the structure of organs. From dissections, clinics and proximity to slaughter houses abundance of histological material of various animals is received. Four periods Elective for Seniors. Professor Roberts and Mr. Hornaday.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors; a store-room, a dark-room, and an incubator-room. All rooms are supplied with electricity, gas, hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fireproof and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by harbarium and alcoholic specimens. The greenhouse is of great utility as a source of material for seed-testing and for conducting experiments in plant physiology and pathology.

50. **Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Freshman. Professor Stevens.

51. **Systematic Botany.**—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Professor Stevens.

52. **Plant Diseases.**—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Professor Stevens.

53. **Plant Diseases (Advanced).**—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor Stevens.

54. **Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor Stevens and Mr. Gainey.

55. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Three periods. For Seniors. Professor Stevens and Mr. Gainey.

56. Dairy Bacteriology.—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. Laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market; making and using starters in butter and cheese-making. Three periods, second term. For Seniors. Mr. Gainey.

ZOOLOGY.

60. Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-book. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Required of Sophomores. Mr. Smith.

ENTOMOLOGY.

61. Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: a, of orchards; b, of small fruits; c, of truck and garden crops; d, of cotton, corn, tobacco, grains, and grasses; e, of forest, shade and ornamental plants; f, of barn, mill, and household. Lectures and demonstrations. Three periods, third term. Required of Sophomores, and two periods, first term, required of Juniors. Mr. Smith.

62. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life-history, and habits. Lecture and laboratory practice. Two periods, three terms. For Seniors. Required in Horticultural Division, elective in other divisions. Mr. Smith.

GEOLOGY AND SOILS.

65. Geology.—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of those forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Four periods, first term. Required of Juniors. Mr. Hill.

66. Soils.—Lectures and recitations upon the origin of soils through the disintegration of rocks, their physical properties, texture, structure, color, weight, and the improvement of these properties. Two periods. Second and third terms. Required of Juniors. Mr. Hill.

CHEMISTRY.

70. Inorganic Chemistry.—McPherson and Henderson's *Elementary Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor Withers and Doctor Williams.

71. Inorganic Chemistry.—Laboratory work. McPherson and Henderson's *Exercises in Chemistry.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. The latter part of the year is given to an introductory course in qualitative analysis. Two periods. Required of Sophomores. Mr. Hill.

72. Agricultural Chemistry.—A study of plant and animal bodies and their products with reference to their composition and the changes in them. Two periods. Required of Juniors. Professor Withers.

73. Chemistry-Elective.—During the Senior year, the student may elect some work in the Chemistry Department from the following subjects: Organic Chemistry, Physiological Chemistry, Qualitative Analysis, Quantitative Analysis. These subjects are described more in detail under the courses in Chemistry beginning with No. 300.

PHYSICS.*

80. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. Latané.

SHOP-WORK.†

90. **Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood; elementary exercises in wood-turning. Two periods, second and third terms. Required of Freshmen. Mr. Clay.

MATHEMATICS.

100. **Algebra.**—Wells's *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, compound interest and annuities, permutations, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite for first term, entrance requirements; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

101. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry.* A complete course in plane geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite entrance requirements. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

ENGLISH.

110. **Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor Harrison, Doctor Summey, Mr. Faulkner.

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*For full information in regard to the Department of Physics, see course in Electrical Engineering.

†For full information in regard to shop-work, and other Mechanical Engineering subjects, see course in Mechanical Engineering.

111. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor Harrison, Doctor Summey, Mr. Faulkner.

112. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor Harrison.

113. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class cf addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor Harrison.

114. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor Harrison.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

120. **German.**—Worman's *Modern Language*, first and second German books; *Studien und Plauderein*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Three periods. Elective for Juniors and Seniors. Doctor Rudy.

ECONOMICS.

130. **Economics.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor Summey.

MILITARY SCIENCE.

140. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first and second terms; two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

150. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Sophomores. Lieutenant Young.

For short courses in Agriculture see page 99.

AGRICULTURAL EXTENSION.

The Department of Agricultural Extension was organized July 1, 1909. The object of this department is to link the scientific agricultural work of the College and Station to the practical work on the farms of the State. Each year the trained scientific workers of America add to the fund of information needed by progressive farmers. The object of this department is to carry this information to the busy men on the farm, and to help in the teaching of farm science in our schools. This is done by addresses to farmers, by farm schools held in different sections, holding seed corn days, organizing boys' corn clubs and in such other ways as time and occasion may permit. Professor I. O. Schaub.

Engineering Courses.

Four-year Courses in
- II. Civil Engineering.
- III. Mechanical Engineering.
- IV. Electrical Engineering.
- V. Chemistry.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this pre-eminently a technical course, yet subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 230†	2	2	2
Wood-work, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2

Sophomore Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Architecture, 220	2	--	--
Architectural Drawing, 221	2	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Descriptive Geometry, 231	--	2	2
Electricity and Magnetism, 281	2	2	2
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
American Literature, 361	3	3	3
Military Drill, 390	3	3	2
Military Tactics, 391	1	1	1

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*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Surveying, 202 and 205	2	2	2
Surveying (field work), 206	2	2	2
Construction, 204	2	--	--
Descriptive Geometry, 200	2	2	2
Graphic Statics, 201	--	2	2
Mechanics, 203	3	3	3
Analytical Geometry, 345	5	3	--
Calculus, 346	--	2	5
Advanced Rhetoric, 362	2	2	--
Public Speaking, 363	--	--	2
Economics, 380	1	1	1
Military Drill, 390	3	3	2
Spanish (elective) 372	3	3	3

Senior Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Mechanics of Materials, 214	3	--	--
Construction, 204	--	2	2
Road-building, 211	2	--	--
Roofs and Bridges, 208	3	--	--
Bridge Design, 209	--	4	4
Municipal Engineering, 210	--	2	2
Surveying (field work), 207	2	1	1
Hydraulics, 215	--	2	2
Calculus, 346	2	--	--
Railroad Engineering, 205	2	2	2
Reinforced Concrete, 213	--	2	2
Astronomy, 212	--	2	2
Mechanics, 203	3	--	--
English Literature, 364	3	3	3
Elect one of the following:			
Military Drill, 390	3	3	2
Spanish, 372	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work.

SUBJECTS OF INSTRUCTION.

200. **Descriptive Geometry, Stereotomy, Topographical Drawing.**—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Three periods. Required of Juniors in Civil Engineering. Mr. Mann.

201. **Graphic Statics.**—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil Engineering. Professor Riddick and Mr. Mann.

202. **Surveying.**—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying.* Two periods, first term. Required of Juniors in Civil Engineering. Mr. Von Glahn.

203. **Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil Engineering. Three periods, first term. Required of Seniors. Mr. Mann.

204. **Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction.* Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

205. **Railroad Engineering.**—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering.* Two periods, second and third terms. Required of Juniors in Civil Engineering. Three periods. Required of Seniors in Civil Engineering. Mr. Mann.

206. **Surveying.**—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil Engineering. Mr. Von Glahn and Mr. Stephens.

207. **Surveying.** Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term; one period,

second and third terms. Required of Seniors in Civil Engineering. Mr. Mann, Mr. Stephens, and Mr. Von Glahn.

208. **Roofs and Bridges.**—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges.* Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Professor Riddick.

209. **Bridge Design.**—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Four periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

210. **Municipal Engineering.**—Text-books, lectures, Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

211. **Road Building.**—Text-book on construction of roads, streets and pavements. Lectures on practical roadmaking in North Carolina. Two periods, first term. Required of Seniors in Civil Engineering. Professor Riddick.

212. **Astronomy.**—Determination of Azimuth, Latitude and Longitude, Time. Comstock's *Astronomy for Civil Engineers.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

213. **Reinforced Concrete.**—Turneaure & Maurer's *General Theory of Concrete and Steel Construction.* Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. Mann.

214. **Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil and in Mechanical Engineering. Professor Riddick.

215. **Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics.* Two periods, second and third terms. Required of Seniors in Engineering. Professor Riddick.

ARCHITECTURE.

220. **Architecture.**—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor Riddick.

221. **Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Mr. Mann and Mr. Von Glahn.

COURSE IN MECHANICAL ENGINEERING.

The regular four year course in Mechanical Engineering is intended to train men in the fundamental principles which underlie all mechanical engineering, and to give such practice in engineering work as it may be possible to give in a technical school.

Upon the completion of the course the man is fitted to enter upon any particular branch of the varied activities which are the especial province of the Mechanical Engineer.

In general these activities embrace the design, construction, manufacture, operation, management and general efficiency of power plants; all problems of power generation and power transmission, wherein a knowledge of boilers, of engines, of steam and water turbines, and of all accompanying auxiliaries, is necessary; all questions involving heating and ventilation; all questions having to do with ice making and refrigeration; all questions concerned with hydraulic motors, and with machinery for the water supply of cities; all mechanical operations and processes involved in mining, either coal or ore, and in ore reduction; all mechanical processes and operations involved in the manufacture of all mill products: steel, wood, cotton, wool, leather, etc.; all commercial work having to do with shops, foundries and factories. The motive power and the mechanical equipment of railroads, together with the design and construction of rolling stock, and the problems of marine engineering, including the design and construction of mechanical equipment of steamships, offers a special field to those trained in Mechanical Engineering.

By no means least of the functions of a Mechanical Engineer is the part he plays in the industrial world as an organizer, a systematizer and a cost reducer.

To success in any one of these particular branches or phases of this profession a thorough technical training is absolutely indispensable—for it supplies the broad, general foundation, which must in its turn be supplemented by practical experience and by contact with the special line of work chosen.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 230	2	2	2
Wood-work, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2

Sophomore Year.

Descriptive Geometry, 231	2	--	--
Mechanical Drawing, 232	--	2	2
Foundry, 237	2	--	--
Pattern Making, 238	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Electricity and Magnetism, 281	2	2	2
Physical Laboratory, 283	1	1	1
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
American Literature, 361	3	3	3
Military Drill, 390	3	3	2
Military Tactics, 391	1	1	1

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engines and Boilers, 241	2	2	2
Mechanics, 250	2	2	2
Machine Design, 233	3	3	3
Machine-shop Work, 239	2	2	2
Electrical Engineering, 284	2	2	2
Electrical Laboratory	1	1	1
Analytical Geometry, 345	5	3	--
Calculus, 346	--	2	5
Advanced Rhetoric, 362	2	2	--
Public Speaking, 363	--	--	2
Political Economy, 297	1	1	1
Military Drill, 390	3	3	2
German (elective), 370	3	3	3

Senior Year.

Applied Mechanics, 251	3	3	2
Machine Design, 234	3	3	3
Machine-shop work, 240	2	2	2
Power Plants, 243	3	--	--
Gas Engines, 244	3	--	--
Power Transmission, 242	--	--	2
Refrigeration, 245	--	--	3
Pumping Machinery, 246	--	1	--
Heating and Ventilation, 247	--	3	--
Structural Engineering, 248	--	2	2
Steam Engineering Laboratory, 249	2	2	2
Calculus, 346	2	--	--
Hydraulics, 215	--	2	2
English, 364	2	2	2
Elect one of the following:			
Military Drill, 390	3	3	2
Modern Language, 370, 371, 372	3	3	3

MECHANICAL ENGINEERING EQUIPMENT.

The drawing and recitation rooms and shops of the Department of Mechanical Engineering are in the Mechanical Engineering Building. They are of ample size and well lighted, and are arranged to be heated either by the exhaust steam from the engine or by live steam. On the first floor are the steam laboratory, machine shop, forge shop, wood-turning and carpenter shop. On the second floor are the recitation room and two drawing rooms, the office and the library. In the office are kept on file various scientific and technical journals, the trade circulars of prominent engineering firms, drawings and photographs of machinery, and tabulated data, as well as a large number of engineering books available for the use of students.

The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character. The equipment consists of a two horse-power engine, a ten horse-power engine, a one horse-power engine (all of which are built by students), a two horse-power International gasoline engine, a two horse-power McVicker automatic gasoline engine, a twenty-five horse-power Stearns engine, a forty horse-power Skinner automatic engine, an injector testing apparatus, apparatus for testing indicator springs and steam gauges, flash point oil tester, Viscosimeter tor oil, a Wheeler surface condenser, connected with a 4 1-2 x 6 x 6 Blake air pump, an Ericsson hot-air pumping engine, apparatus for making analysis of flue gases, a fuel-calorimeter, a water motor, a Worthington water meter, a complete Westinghouse air brake equipment, a New York air brake equipment, (in section), friction brakes, weirs, indicators, planimeters, slide rules, thermometers, calorimeters, gauges, tanks, scales, a Crosby gauge tester, two hydraulic rams, a 50,000-pound Riehlé automatic autographic testing machine arranged for tensional, compression and transverse testing; a 15,000-pound Olsen testing machine, and other apparatus for making tests.

The shops are equipped as follows:

The wood-working equipment consists of fifteen double carpenters' benches which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6 1-2-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 34-inch band saw; a jig-saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain mortiser; a dovetailing machine;

a 38-inch grindstone; a wood trimmer; an adjustable miter box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

The forge shop is a well lighted and ventilated, neatly paved, room, thirty by forty feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system, operated by a 60-inch Sturtevant exhaust fan, for removing smoke from fires; anvils and all necessary hand tools.

The machine shop contains a 16-inch Davis & Egan lathe with 10-foot bed, 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Champion lathe with 6-foot bed, a 14-inch Flather lathe with a 6-foot bed, three 14-inch lathes with 6-foot beds, (built in College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a Brown & Sharpe universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a Greenwich arbor press and an electric center grinder, a Whiton centering machine, and a twist drill grinder. The machines have full equipment of chucks, rests and tools. The benches are well provided with vises.

The foundry occupies a separate building, 30 x 60 feet, and is of capacity to accommodate about 30 students. It contains a 36-inch cupola, two Griffin oil-burning furnaces, one for cast iron, one for brass, a No. 0 Sturtevant high-pressure blower for furnishing air, and a small triplex pump for furnishing oil under pressure. There is also a crucible brass furnace, a core oven and all necessary tools for bench and floor work.

The power for all the shops is furnished by electric motors.

SUBJECTS OF INSTRUCTION.

230. Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of descriptive geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Two periods. Required of Freshmen and first year Short Course. Mr. Selby.

Note.—Each student will be required to furnish at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale at practically cost the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit $10.00:

Drawing board, 22 by 32 inches.
T-square, 30 inches.
60° triangle, 9 inches, transparent.
45° triangle, 7 inches, transparent.
12° triangle, architect's scale.
4 H pencil. H or F pencil.
Erasers for ink and pencil.
Penholder with fine points.
Pencil sharpener.

Instrument set consisting of:

6-inch compass with pen, pencil and leng.
5 1-2-inch dividers with hair-spring adjustment.
3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
5 1-2-inch ruling pen, 4 1-2-inch ruling pen.

231. **Descriptive Geometry.**—General definitions; third angle; representation of points, lines and planes; profile plane; projected views; line and plane essentials; relations of points, lines and planes in space; intersection of lines and planes; curved surfaces; development of surfaces; plane sections of solids. During the term many practical problems are given for solution and construction. Two periods. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Professor Satterfield and Mr. Morris.

232. **Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blueprinting. Elementary machine design. Cam design. Two periods. Second and third terms. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Mr. Morris.

233. **Machine Design.**—A study of the materials used in machine construction; analysis of the stresses in machine parts; design of machine parts considering them as compression, tension, or torsion members; modification of the above parts to suit practice and for the sake of general appearance. Design of gears, shafting, bearings and supports. Design of simple machines such as shears, punches, air hoists, riveters, etc. One lecture and two drawing periods per week. Required of Juniors in Mechanical and Electrical Engineering. Prerequisite, De-

scriptive Geometry and Mechanical Drawing 231 and 232. Assistant Professor Ellis.

234. **Machine Design.**—Estimating, checking of working drawings, original design. Calculations and workings drawings of types of steam engines, gas engines, gas producers, condensers, etc. Three periods. Required of Seniors in Mechanical Engineering. Assistant Professor Ellis.

235. **Wood-work.**—The use and care of the ordinary wood-working bench tools. Exercises in laying out and working from drawings, sawing, planing and making of joints. The use and care of woodworking machines such as saws, planers, shapers, dovetailers, tenoner, etc. Exercises in wood turning. Work on repairs about the College. Two periods. Required of Freshmen and first year Short Course. Mr. Clay.

236. **Forge-work.**—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer. Special work on equipment and repairs about the College. Required of Freshmen and first year Short Course. Two periods, recitations and exercises, first and second terms. Mr. Wheeler.

237. **Foundry.**—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of Freshmen. Two periods, third term. Sophomores in Mechanical and Electrical Engineering and second year Short Course. Two periods, first term. Mr. Park and Mr. Wheeeler.

238. **Pattern Making.**—A study of pattern making in its relation to moulding; the practical construction of patterns to prevent warping and twisting, making of special patterns, cores and core-boxes, introducing draft, shrinkage, finish and the appliances and usages of modern pattern work. Required of Sophomores in Mechanical, Electrical and Mining Engineering. Two periods, second and third terms. Pre-requisite, Work-work 146. Mr. Clay and Mr. Morris.

239. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling and shaper work. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. Park.

240. **Machine-shop Work.**—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Two periods. Required of Seniors in Mechanical Engineering. Mr. Park.

241. **Steam Engines and Boilers.**—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and mehods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed water-heaters; mechanical stokers; smoke consumers and chimneys are studied in detail. Two periods. Required of Juniors in Mechanical, Textile and Electrical Engineering. Professor Satterfield.

242. **Transmission of Power.**—This work includes a study of the methods employed for the transmission and measurement of power in machine shops and factories, and review of experiments which have been made to determine the efficiency of the various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

243. **Power Plants.**—Mechanical Engineering of power plants. Selection and arrangement of machinery, appliances, piping. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

244. **Gas Engines.**—Theory of the gas engine. Various types of gas, gasoline and oil engines. Brake and indicated horse power; efficiency. Gas producers. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

245. **Refrigerating.**—Various types of ice-making machinery. Compression and absorption system. Carbon dioxide and compressed-air machines. Three periods, third term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

246. **Pumping machinery.**—Direct acting, fly-wheel and duplex, and centrifugal pumps. Pumping engines. Waterworks machinery. Duty and efficiency. Hydraulic engines. One period, second term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

247. **Heating and Ventilation.**—Steam, hot-water, furnace and blower systems of heating. Ventilation. Design of heating and ventilation systems. Three periods, second term. Required of Seniors in Mechanical Engineering. Professor Satterfield.

248. **Structural Engineering.**—Graphic statics; stresses in framed structures, roof trusses, simple beams, line loads on beams. Methods of loading bridge trusses, stresses in bridge trusses. Design of trusses of various kinds. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Assistant Professor Ellis.

249. **Steam Engineering Laboratory.**—Practice in engine running, valve-setting; calibration of instruments; testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Testing of materials. A brief course in Surveying is given, so as to enable a student to locate buildings, foundations, line up shafting, engines and machinery by use of the transit and level. Two periods. Required of Seniors in Mechanical Engineering. One period. Required of Seniors in Electrical Engineering. Professor Satterfield and Assistant Professor Ellis, Mr. Morris and Mr. Clay.

250. **Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Preparatory to Applied Mechanics in Senior. Two periods. Required of Juniors in Mechanical and Electrical Engineering. Mr. Selby.

251. **Applied Mechanics.**—A study of the laws of equilibrium and motion as applied to a particle and to rigid bodies; analytic treatment of stresses in framed structures, center of gravity, moment of inertia, work and energy, and friction; mechanics of materials, including stresses and deformations in tension, compression, shearing, torsion, and flexure, stresses and deformation in long columns, continuous girders, arch ribs, and reinforced concrete, and the elements of the theory of elasticity. Three periods, first and second terms; two periods third term. Prerequisite, Mechanics 250. Required of Seniors in Mechanical and Electrical Engineering. Assistant Professor Ellis.

252. **Mechanical Technology.**—Classification and uses of wood working and forging tools and machines. Methods of wood-working and forging. Arrangement, sizes, and care of belting and shafting. Elementary power problems, steel making, etc. One period. Required of first year Short Course. Professor Satterfield.

253. **Machine Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two

periods. Required of second year Short Course students. Assistant Professor Ellis.

254. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Required of second year short course students. Two periods. Mr. Park.

255. Power Machinery.—Descriptive study of the machinery of steam power plant engines, boilers, condensers, pumps, steam turbines, piping, care and management. Study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Required of second year Short Course. Three periods. Professor Satterfield.

COURSE IN ELECTRICAL ENGINEERING.

The four year course in Electrical Engineering is designed for those who wish a thorough and practical training in this profession. Only a most thorough training in the fundamental facts and principles of the science of electricity and magnetism will be satisfactory for a branch of engineering which is advancing so rapidly. A great deal of attention is, therefore, paid to good text-book work, and as soon as the first principles of the science are mastered by the student he is given a series of experiments in which careful measurements with exact instruments are made.

The department, as will be seen from the description of the equipment, is well supplied with dynamos, motors, and other electrical apparatus, and testing instruments of all kinds.

PHYSICS.

A thorough training in the elements of physics is provided in a two-year course planned especially to meet the needs of engineering students. Instruction in the class room is accompanied by laboratory courses laid out so as to illustrate not only the principles taught in the former, but also to train the student to observe accurately, and to give him considerable facility in the use of scientific instruments. During the first year the subjects of mechanics, hydraulics, pneumatics, heat, and light are taken up. The second year is given to the study of electricity and magnetism and includes outlines of the more important applications.

Brief courses in physics are given for students in Agriculture, Textile Industry and Mechanic Arts.

EQUIPMENT.

The laboratories for these courses in physics are in the basement of the Administration Building, where is also a large lecture room fitted with a lantern and facilities for giving experimental lectures. There are two laboratories, one for the first-year course in physics, and the other for electrical and magnetic measurements. These rooms are spacious and well lighted and well equipped with apparatus.

IV. The four-year course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Mechanical Drawing, 230	2	2	2
Wood-work, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2

Sophomore Year.

Electricity and Magnetism, 281	2	2	2
Physical Laboratory, 283	1	1	1
Descriptive Geometry, 231	2	--	--
Mechanical Drawing, 232	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory) 301	2	2	2
Foundry, 237	2	--	--
Pattern Making, 238	--	2	2
American Literature, 361	3	3	3
Military Drill, 390	3	3	2
Military Tactics, 391	1	1	1

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 284	2	2	2
Electrical Engineering Laboratory, 287	2	2	2
Steam Engines and Boilers, 241	2	2	2
Machine-shop work, 239	2	2	2
Machine Design, 233	3	3	3
Mechanics, 250	2	2	2
Analytical Geometry, 345	5	5	--
Calculus, 346	--	--	5
Advanced Rhetoric, 362	2	2	--
Public Speaking, 363	--	--	2
Economics, 380	1	1	1
Military Drill, 390	3	3	2

Senior Year.

Alternating Currents, 285	3	3	3
Electrical Applications, 286	3	3	3
Electrical Engineering Laboratory, 288	2	2	2
Electrical Design, 289	2	2	2
Steam Engines and Boilers (1911 only), 241	2	2	2
Applied Mechanics, 251	3	3	2
Steam Engineering (laboratory), 249	1	1	1
Calculus, 346	2	--	--
Hydraulics, 215	--	2	2
English Literature, 364	2	2	2
Elect one subject from the following:			
Military Drill, 390	3	3	2
Modern Languages, 370, 371, 372	3		3

SUBJECTS OF INSTRUCTION.

280. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound, and light. Text-book used: Milliken & Gale's *First Course in Physics*. Four periods. Required of Freshmen in Engineering courses. Mr. Sprague and Mr. Latané.

281. Elementary Electricity and Magnetism.—Magnetism, current electricity, electric circuits; electro-magnetism and magnetic induction; electrostatics. Text-book used: Thompson's *Elementary Lessons in Electricity and Magnetism*. Two periods. Required of Sophomores in Engineering courses. Prerequisites, Subjects 280, 340, and 341. Assistant Professor McIntyre and Mr. Sprague.

282. Physical Laboratory.—Practice in handling units in British and metric systems; experiments in mechanics illustrating composition and resolution of forces; the lever; the inclined plane; the pendulum; density and specific gravity. Experiments in heat, light and sound, illustrating the following subjects: Thermometer calibration, calorimetry, hydrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscope. Text-book used: Milliken & Gale's *A Laboratory Course in Physics*. One period. Required of Freshmen in Engineering Courses. Mr. Sprague and Mr. Latané.

283.—Physical Laboratory.—Continuation of Study 282. Elementary experiments in magnetism; the electric circuit; primary batteries; measurements of electromotive force, current, and resistance. One period. Prerequisite, Subject 282. Required of Sophomores in Electrical and Mechanical Engineering and in Chemistry. Mr. Sprague.

ELECTRICAL ENGINEERING.

Equipment.

The courses in Electrical Engineering are accompanied by work in the laboratory or the designing room. For the former, two laboratories are available: the electrical-measurements laboratory, and the dynamo laboratory. The former is equipped with electrical instruments of all kinds, including ammeters, voltmeters, and wattmeters of all ranges, testing sets of various kinds, and a standardizing set consisting of an excellent, modern potentiometer with all auxiliaries. This laboratory is supplied from the dynamo laboratory with electrical currents of any type desired.

The dynamo laboratory is in a one-story brick building, thirty feet by fifty feet. This is supplied with alternating and direct currents from the College power house. The equipment consists of direct and alternating current dynamos of standard types, motors for direct and alternating current circuits, railway motors, variable speed motors, repulsion and induction motors, transformers for constant potential and constant current, arc and incandescent and mercury vapor lamps, ammeters, voltmeters, wattmeters, tachometers, frequency meters, lamp banks and rheostats. A convenient and well-equipped switchboard distributes current to all points of the laboratory.

POWER HOUSE.

The power house, which is also available for student instruction, is a fine brick building, containing an excellent equipment of the most modern type. This consists of a 75-kw. 600-volt three-phase Crocker-Wheeler alternator, directly connected to a Skinner engine; two 50-kw. 300-volt three-phase Crocker-Wheeler alternators driven by a De Laval steam turbine, with direct-driven exciter; two additional exciting units, one engine-driven and one motor-driven, and a switchboard provided with meters, synchroscope, oil circuit breakers, etc.

LIBRARY.

The department has a small but growing library, and takes a number of the leading electrical journals, all of which are at all times available for the students' use.

SUBJECTS OF INSTRUCTION.

284. **Direct Current Machinery and Apparatus.**—A thorough study is made of the production and utilization of direct currents, beginning with the theory of the magnetic circuit, electromagnetic induction, electrical measurements, storage batteries, dynamos and motors, operation and care of direct current machinery. Text-book used: Franklin & Esty's *Elements of Electrical Engineering.* Two periods. Required of Juniors in Electrical and Mechanical Engineering. Prerequisites, Subjects 281, 342, 343 and 344. Professor Browne.

285. **Alternating Currents and Machinery.**—A study of the flow of periodic currents in circuits containing resistance, inductance and capacity. The theory of transformers. The construction, operation and performance of alternating current machinery. Text-book used: Franklin & Esty's *Alternating Currents.* Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284, 345, 346.

286. Industrial Applications of Electricity.—A detailed study is made of the many industrial applications of electricity, including the various methods of distributing electrical energy, illumination, electric traction, the electric drive in mill and factory, electric power stations, long distance power transmission, industrial electro-chemistry and electro-metallurgy, telegraphy and telephony. Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 287. Professor Browne.

287. Direct Current Laboratory.—This study accompanies that of direct current machinery. The use of standardizing apparatus, calibration of instruments, permeability and hysteresis tests, and the operation and testing of direct current dynamos and motors. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Juniors in Electrical Engineering; one period required of Juniors in Mechanical Engineering. Prerequisites, Subjects 281 and 283. Assistant Professor McIntyre.

288. Advanced Dynamo Laboratory.—This study is taken up simultaneously with the study of alternating currents. It includes practice with alternating currents, measurement of inductance and capacity, experimental study of transformers, alternating current generators and motors, advanced methods of testing electrical apparatus, and shop testing. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 287. Assistant Professor McIntyre.

289. Electrical Design.—An introductory course in the designing of electrical apparatus, taking up the design of rheostats and heating devices, controllers, and electromagnets, the design of transformers, direct and alternating current dynamos and motors. Two periods. Required of Seniors in Electrical Engineering. Prerequisite, Subject 284. Professor Browne.

COURSE IN CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in that department. To this end the training given in general, organic, and analytic chemistry is supplemented by instruction in technical chemical analysis and in applied chemical subjects. The kindred scientific subjects of Biology and Physics are taught, together with the cultural studies included in the other courses.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of the department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

CHEMICAL EQUIPMENT.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor, and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement and will accommodate one hundred and eighteen students.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

VI. The Four-year Course in Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Botany, elementary, 310	3	3	--
Botany, systematic, 311	--	--	3
Physiology, 325	3	3	3
Physics, 281	4	4	4
Physical Laboratory, 282	1	1	1
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2

Sophomore Year.

Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
Electricity and Magnetism, 281	2	2	2
Physical Laboratory, 283	1	1	1
Zoology, 330; and Entomology, 331; or Drawing, 230	2	2	3
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
American Literature, 361	3	3	3
Military Tactics, 391	1	1	1
Military Drill, 390	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 302	2	2	2
Analytical Chemistry, 304	5	7	7
Bacteriology, 312	2	2	2
Geology and Soils, 320	4	2	2
German, 277, 330	3	3	3
Advanced Rhetoric, 362	2	2	--
Public Speaking, 363	--	--	2
Economics, 380	1	1	1
Military Drill, 390	3	3	2

Senior Year.

Organic, Chemistry 303	2	2	2
Organic Chemistry, (laboratory), 306	3	3	3
Analytical Chemistry, 305	6	6	6
German, 370	3	3	3
Elect eight periods from the following:			
English Literature, 364	3	3	3
Military Drill, 390	3	3	3
Advanced Bacteriology, 313	3	3	3
Advanced Inorganic Chemistry, 308	2	2	2
Other subjects subject to the approval of the Professor of Chemistry.			

CHEMISTRY.

300. **Inorganic Chemistry.**—McPherson & Henderson's *Elementary Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor Withers and Doctor Williams.

301. Inorganic Chemistry.—Laboratory work. McPherson & Henderson's *Exercises in Chemistry.* Chemical Experiments. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. The latter part of the course includes introductory qualitative analysis. Two periods. Required of Sophomores. Mr. Hill.

302. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important aliphatic compounds are studied. Two periods. Required of Juniors in Chemistry. Professor Withers and Doctor Williams.

303. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* A continuation of 302, including the aromatic compounds. Two periods. Required of Seniors in Chemistry. Professor Withers.

304. Analytical Chemistry.—Treadwell's Qualitative Analysis. A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common elements in unknown substances. Five periods, first term; seven periods, second and third terms. Required of Juniors in Chemistry. Doctor Williams.

305. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of agricultural and technical importance. Seven periods, second and third terms. Required of Juniors in Chemistry. Six periods. Required of Seniors in Chemistry. Doctor Williams.

306. Organic Chemistry.—Laboratory work. Orndorff's *Laboratory Manual* and Gatterman's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. Three periods. Required of Seniors in Chemistry. Doctor Ray.

307. Bio-Chemistry.—Lectures and recitations. Reference—Simon's *Physiological Chemistry.* A discussion of the albumins, carbohydrates and fats; ferments, the digestive fluids and the processes of digestion, etc. Two periods. Senior elective. Dr. Ray.

308. Advanced Inorganic Chemistry.—Lectures and recitations. Two periods. Elective for Seniors. Mr. Hill.

BOTANY AND BACTERIOLOGY.

310. **Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algae, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi. The student's knowledge is made his own through field work and simple independent investigations. Three periods, first and second terms. Required of Freshmen in Chemistry. Professor Stevens.

311. **Systematic Botany.**—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Freshmen in Chemistry. Professor Stevens.

312. **Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor Stevens and Mr. Gainey.

313. **Bacteriology (Advanced).**—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Three periods. For Seniors in Chemistry. Professor Stevens and Mr. Gainey.

ZOOLOGY AND ENTOMOLOGY.

320. **Zoology.**—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-books. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Elective for Sophomores in Chemistry. Mr. Smith.

321. **Economic Entomology.**—Elements of insect structure and classification. Injurious insects and remedies: a, of orchards; b, of small fruits; c, of truck and garden crops; d, of cotton, corn, tobacco, grains, and grasses; e, of forest, shade and ornamental plants; f, of barn, mill, and household. Lectures and demonstrations. Three periods, third term. Elective for Sophomores in Chemistry. Mr. Smith.

PHYSIOLOGY.

325. **Animal Physiology.**—The first term's work will deal largely with a study of the structure of the body, the second and third terms' work with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating the principles of physiology. Three periods. Required of Freshmen in Chemistry. Professor Roberts and Mr. Hornaday.

GEOLOGY AND SOILS.

330. **Geology.**—Scott's *Introduction to Geology.* In the first part of the course the principles of Dynamical Geology, the forces which have modified and are still modifying the earth, are considered. The results of these forces are seen and studied in the structure of the earth and in the phenomena of volcanoes, earthquakes, faults and folds, crust movements, etc. In the latter part of the course the life-history of the earth as recorded in the rocks is studied. Special attention is given to the commonly occurring rocks and ores, and the main features of the geology of North Carolina form an integral part of the course. The text is supplemented by lectures. Four periods, first term. Required of Juniors in Chemistry. Mr. Hill.

331. **Soils.**—Lectures and recitations upon the origin of soils through the disintegration of rocks, their physical properties, texture, structure, color, weight and the improvement of these properties. Two periods, second and third terms. Required of Juniors in Chemistry. Mr. Hill.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Courses, yet it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises and lectures, with written tests each month.

340. Algebra.—Wells's *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

341. Plane Geometry.—Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Mr. Richardson, Mr Harrelson and Mr. Stevens.

342. Solid Geometry.—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 341. Professor Yates, Mr. Richardson, and Mr. Harrelson.

343. Advanced Algebra.—Wells's *New Higher Algebra.* The general theory of equations. the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite, 340 and 341. Professor Yates and Mr. Richardson.

344. Trigonometry.—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Definitions of the trigonometric functions; derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 340 and 341. Professor Yates and Mr. Richardson.

345. Analytical Geometry.—Nichols's *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves and geometry of three dimensions. Five periods. first term; three periods, second term. Required of Juniors in Engineering. Prerequisite. 342, 343 and 344. Professor Yates.

346. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of indeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Two periods, second term; five periods, third term. Required of Juniors. Two periods, first term. Required of Seniors. Prerequisite: For differential calculus, 342, 343 and 344, for integral calculus, differential calculus and 345. Professor Yates.

ENGLISH.

360. **Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor Harrison, Doctor Summey, Mr. Faulkner.

361. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor Harrison, Doctor Summey, Mr. Faulkner.

362. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods, first and second terms. Required of Juniors. Professor Harrison.

363. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor Harrison.

364. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor Harrison.

MODERN LANGUAGES.

The aim of the department is to enable one (a) to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and (b) to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, frequent repetitions, and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone. Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German for students of Chemistry and Mechanical Engineering, and Spanish for Civil and Electrical Engineering students.

370. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar,* by Calvin Thomas; *German Reader,* by Fischer; *Scientific Reader.* Elective for Juniors or Seniors. Doctor Rudy.

371. **French.**—Worman's *Modern Language*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor Rudy.

372. **Spanish.**—Worman's *Modern Languages*, first and second Spanish books; *Introduction a la Lengua Castellana.* Marion y Des Garrenes; a Spanish Grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas.* Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor Rudy.

ECONOMICS.

380. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Juniors. One period. Doctor Summey.

MILITARY SCIENCE.

390. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Required of all classes except Seniors. Seniors are either to take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

391. **Tactics**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Sophomores. Lieutenant Young.

Textile Courses.

VIII. The Four-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a typical cotton mill, is fully equipped with all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to students who can not spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening Room.—One combination opener and breaker lapper, made by Kitson Machine Co., Lowell. Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell. Mass.

Carding Room.—One 40-inch revolving flat card, 112 flats. with coiler, made by Mason Machine Works, Taunton, Mass One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops. Newton Upper Falls. Mass. One single railway head. with coiler, leather rolls. made by Whitin Machine Works, Whitinsville. Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler. metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine. one ribbon lap machine and one six-head combing machine. made by Whitin Machine Works, Whitinsville. Mass. One 36-spindle slubber for 11x5 1-2-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket. R. I. One 48-spindle intermediate roving frame for 9x4 1-2-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3 1-2-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press

Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2 1-2-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning Room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling, made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1 1-2-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting, and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by the T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen looms; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Killburn, Lincoln & Co., Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2x1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton 4x1 box gingham loom, one Crompton 4x1 box loom with 20-harness dobby, one Crompton 2 and 1-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4x4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One single-box loom with 200-hook table-napkin Jacquard machine. One 4x1 box table-cover loom with 624 hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. One Whitin loom with 624-hook Halton Jacquard for Crocket Quilts. Ten 4x4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4x4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Knitting.—One Full Automatic Knitting Machine, made by Geo. D. Mayo Machine Company, Laconia, N. H. One Combination Ribber and Footer, one Ribber made by Scott & Williams, Philadelphia. One "Banner" Knitting Machine, made by Hemphill Manufacturing Co., Pawtucket, R. I. One Ribber, made by Wildman Manufacturing Co., Norristown, Pa. One Looper, made by Beattie Manufacturing Co., Cohoes, N. Y. One Looper, made by Grosser Machine Company, New York.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for doing experimental dyeing, dye-testing, color-matching, the testing of dyed samples to light, acids, alkalis, etc., as well as carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching. dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

H. A. Metz & Co., New York.
Badische Company, New York.
Farbenfabriken of Elberfeld Co., New York
Danker & Marston, Boston, Mass.
Berlin Aniline Works, New York.
Cassella & Co., New York.

Dye-house Equipment.—Seven dye vats; one Roessler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kier; one hand-dyeing jigger; one 15-gallon steam jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Co.'s warp dyeing machine; one Textile Finishing Co.'s warp sizing machine; one 5-can upright dryer; one small Lightfoot raw stock dyeing machine; one Tolhurst Machine Works hydro-extractor; one Schaum & Uhlinger hydro-extractor; one Mather & Platt cloth printing machine; one Fries warp dyeing machine; one dry closet.

A full equipment of analytical balances and other necessary apparatus for experiment work.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks-Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400 †	1	1	1
Weaving, 401	2	2	2
Mechanical Drawing, 430	2	2	2
Wood-work, 431	2	2	2
Forge-work, 432	2	2	--
Foundry, 433	--	--	2
Algebra, 441	5	3	--
Geometry, 442	--	2	5
Elementary Physics, 440	2	2	2
Composition and Rhetoric, 450	3	3	3
Military Drill, 480	3	3	2

Sophomore Year.

Carding and Spinning, 400	2	2	2
Weaving, 401	2	2	2
Textile Designing, 402	2	1	1
Cloth Analysis, 403	--	1	1
Inorganic Chemistry, 420	3	3	3
Inorganic Chemistry (laboratory), 421	2	2	2
Geometry, 443	5	--	--
Advanced Algebra, 444	--	3	--
Trigonometry, 445	--	2	5
American Literature, 451	3	3	3
Military Drill, 480	3	3	3
Military Tactics, 481	1	1	1

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*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	4	4	4
Weaving, 401	3	3	3
Textile Designing, 402	2	1	1
Cloth Analysis, 403	--	1	1
Dyeing, 410	2	2	2
Dyeing (laboratory), 411	2	2	2
Steam Engines and Boilers, 435	2	2	2
Advanced Rhetoric, 452	2	2	--
Public Speaking, 453	--	--	2
Economics, 470	1	1	1
Military Drill, 480	3	3	2
German, 460	3	3	3

Senior Year.

Carding and Spinning, 400	4	4	4
Weaving, 401	4	4	4
Textile Designing, 402	2	2	2
Cloth Analysis, 403	1	1	1
Dyeing, 410	1	1	1
Dyeing (laboratory), 411	2	2	2
Machine-shop work, 434	2	2	2
Elect two subjects from the following:			
English Literature, 454	3	3	3
Military Drill, 480	3	3	2
German, 460	3	3	3

DESCRIPTION OF SUBJECTS.

400. **Carding and Spinning.**—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning; baling and marketing the raw

staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards, sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations,* by Tompkins; *Cotton Spinning, by Nasmith.*. Required of Freshmen, Sophomores, Juniors, and Seniors. Assistant Professor Parker.

401. **Weaving.**—Lectures and practice in warp preparation; operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher; creel; cylinder; immersion roll; squeeze rolls; drying fan; separator rolls; winding yarn on beam; cone drive; slow motion; measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing receipts for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms; construction of plain loom; principal movements in weaving; let-off and take-up motions; filling stop motion; warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms; changing boxes to have easy-running looms; construction and value of multipliers; timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations; speed and production calculations; relative speed of looms; counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering, tentering; folding and packing for the market. Equipment necessary for

warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy,* by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor Nelson and Mr. Steed.

402. **Textile Designing.**—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Plain and fancy piques. Double plain; figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor Nelson and Mr. Steed.

403. **Cloth Analysis and Fabric Structure.**—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, Seniors. Professor Nelson and Mr. Steed.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dye stuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	1	1	1
Weaving, 401	2	2	2
Mechanical Drawing, 430	2	2	2
Wood-work, 431	2	2	2
Forge-work, 432	2	2	--
Foundry, 433	--	--	2
Algebra, 441	5	3	--
Geometry, 442	--	2	5
Elementary Physics, 440	2	2	2
Composition and Rhetoric, 450	3	3	3
Military Drill, 480	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	2	2	2
Weaving, 401	2	2	2
Textile Designing, 402	2	1	1
Cloth Analysis, 403	--	1	1
Inorganic Chemistry, 420	3	3	3
Inorganic Chemistry (laboratory), 421	2	2	2
Geometry, 443	5	--	--
Advanced Algebra, 444	--	3	--
Trigonometry, 445	--	2	5
American Literature, 451	3	3	3
Military Drill, 480	3	3	2
Military Tactics, 481	1	1	1

Junior Year.

Dyeing, 410	2	2	2
Dyeing (laboratory), 411	2	2	2
Organic Chemistry, 422	2	2	2
Analytical Chemistry, 424, 425	5	7	7
Advanced Rhetoric, 452	2	2	--
Public Speaking, 453	--	--	2
Economic, 470	1	1	1
Military Drill, 480	3	3	2
German, 460	3	3	3

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 410	3	3	3
Dyeing, (laboratory), 411	2	2	2
Organic Chemistry, 423	2	2	2
Analytical Chemistry, 425	6	6	6
Organic Chemistry (laboratory), 426	3	3	3
Elect two subjects from the following:			
English Literature, 454	3	3	3
Military Drill, 480	3	3	2
German, 460	3	3	3

DESCRIPTION OF SUBJECTS.

410. **Dyeing.**—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers; the action of acids, alkalis, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step. The adaptability of water for bleaching and dyeing, followed by the theories of dyeing. Substantive dyestuffs and their application to cotton. After-treatment of direct dyestuffs, including diazotising and developing and the topping with basic dyestuffs. The application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts. Dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber. The methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers. The scouring and bleaching of wool. The carbonization and chlorination of wool. The application of basic, acid, chrome, eosine, and direct colors to wool. Dyeing wool with logwood, fustic, and other natural dyewoods. Methods of the making and dyeing of artificial silk. The boiling off, bleaching and

dyeing of natural silk. Study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods. The use of the various kinds of machines used in bleaching and dyeing. The dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions. The science of color-mixing. Color-matching on textiles. The use of the tintometer and colorimeter. Calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing. Quanitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk. The testing of dyestuffs for their shade, tinctorial power, and leveling properties. Comparative dye trials to determine money value. Testing for mixtures. The reactions of acids, alkalis and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Mr. Halstead.

411. **Dyeing Laboratory.**—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a pattern book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. Halstead.

CHEMISTRY.*

420. **Inorganic Chemistry.**—McPherson & Henderson's *Elementary Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor Withers and Doctor Williams.

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*For further information, see course in Chemistry.

421. Inorganic Chemistry.—Laboratory work. McPherson & Henderson's *Exercises in Chemistry.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. The latter part of the year is devoted to an introductory course in qualitative analysis. Two periods. Required of Sophomores. Mr. Hill.

422. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied through the aliphatic series. Two periods. Required of Juniors in Dyeing. Professor Withers.

423. Organic Chemistry—A continuation of 422, beginning with the aromatic series. Two periods. Required of Seniors in Dyeing. Professor Withers.

424. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Five periods, first term. Required of Juniors in Dyeing. Doctor Williams.

425. Analytical Chemistry.—Treadwell's *Quantitative Analysis,* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Six periods. Required of Seniors in Dyeing. Doctor Williams.

426. Organic Chemistry.—Laboratory work. Gattermann's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Three periods. Required of Seniors in Dyeing. Doctor Ray.

MECHANICAL ENGINEERING*

430. Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine; elementary principles of descriptive geometry; cylinders, cones, and prisms;

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*For full information, see course in Mechanical Engineering.

intersection and development of surfaces; miscellaneous problems. Two periods. Required of Freshmen. Mr. Vaughan.

431. **Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. Clay.

432. **Forge-work.**—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. Wheeler.

433. **Foundry.**—Recitations and exercises in foundry work, including moulding, core making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of Freshmen, third term. Mr. Wheeler.

434. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. Park.

435. **Steam Engines and Boilers.**—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and a study of inertia and tangential pressures; also a study of the steam-engine indicator, of indicator rigging, and of steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction noted. The number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed-water heaters; mechanical stokers; smoke-consumers and chimneys are studied in detail. Two periods. Required of Juniors in Textile Industry. Professor Satterfield.

PHYSICS.*

440. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. Latané.

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*For full information, see course in Electrical Engineering.

MATHEMATICS.

441. **Algebra.**— Wells's *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutation, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

442. **Plane Geometry.**— Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

443. **Solid Geometry.**—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 442. Professor Yates, Mr. Richardson, and Mr. Harrelson.

444. **Advanced Algebra.**— Wells's *New Higher Algebra.* The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite: 441 and 442. Professor Yates and Mr. Richardson.

445. **Trigonometry.**— Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Definitions of the Trigonometric functions; derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of Spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 441 and 442. Professor Yates and Mr Richardson.

ENGLISH.

450. **Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Professor Harrison, Doctor Summey, and Mr. Faulkner.

451. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor Harrison, Doctor Summey, and Mr. Faulkner.

452. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Two periods. first and second terms. Required of Juniors. Professor Harrison.

453. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Two periods, third term. Required of Juniors. Professor Harrison.

454. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Three periods. Elective for Seniors. Professor Harrison.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult contructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts. and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, frequent repetitions and a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may elect German during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German and French.

460. **German**—Worman's *Modern Languages*, first and second German books: *Studien und Plaudereien*, first and second books: Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; *Scientific Reader*. Elective for Juniors nd Seniors. Doctor Rudy.

461. **French.**—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories of French literaure, and scientific readers. Doctor Rudy.

This subject may be taken by special petition to the Faculty.

ECONOMICS.

This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Required of Juniors. Doctor Summey.

MILITARY SCIENCE.

480. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; and two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant and Officers of the Battalion.

481. **Tactics.**—Theoretical instruction in Infantry Drill. Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Sophomores. Lieutenant Young.

Short Courses.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following short courses are offered. None of these courses, of course, lead to graduation, and they are not, in any sense, intended as preparatory courses to the regular four-year classes. They are designed simply to help young men better fit themselves, by a year or two of practical work under competent and interested supervision, for their chosen sphere of industrial activity.

These students whose inclinations, limitations, or necessities lead them to take these shorter courses will be carefully drilled in the handicraft and mechanism of their art and in the application of elementary science to the farm, garden, dairy and orchard.

ONE-YEAR COURSE IN AGRICULTURE.

Agriculture (Elementary).—The course in Elementary Agriculture will consist of lectures and recitations from text-book on soils, crops, fertilizers, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, taking up the analysis and classification of soils; identification and habit of growth of farm crops; drawing plans of farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Five periods, first, second and third terms. Professor Newman.

Animal Husbandry.—Study of breeds, live-stock judging and their management, animal breeding and stock feeding. Lectures will begin on all the above subjects, which will be supplemented with practical work as far as possible. Three periods, first, second and third terms. Professor Michels.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he is familiar with their construction and until he becomes proficient in operating them.

The laboratory course is supplemented with lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Five periods, third term. Professor Michels.

Veterinary Science.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live-stock to prevent diseases, and the treatment of some of the most common diseases. Five periods, first term. Doctor Roberts.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. Mr. Jeffrey.

Fruit Culture.—This course includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of the leading fruits. These deal with the kind of soil; preparation of soils for fruits; varieties; origination of new varieties; planting; cultivation; fertilizing; pruning; harvesting, and marketing. Emphasis is laid on the home fruit garden. Three periods, first and second terms. Associate Professor Reimer.

Vegetable Gardening.—This course discusses the great trucking industry in the State, and the possibilities of the industry. This is followed by lectures on the best methods of growing the leading vegetables. Three periods, third term.

Laboratory Work.—This includes practices in plant propagation, as budding, grafting, top-grafting, cuttings; pruning of fruit and ornamental trees; fruit-bud studies; planting trees, transplanting, and construction of cold-frames and hot-beds. Associate Professor Reimer.

Diseases of Plants.—Practical instruction will be given concerning the chief fungous or bacterial diseases attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures. Three periods, second term. Professor Stevens.

Plant Life.—The structure of the leading types of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Four periods, first term. Professor Stevens.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Two periods, second term, and three periods third term. Mr. Smith.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms. Two hours, third term. Commandant and Officers of the Battalion.

One Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	5	5	5
Animal Husbandry	3	3	3
Dairying	--	--	5
Veterinary Science	5	--	--
Poultry Husbandry	--	3	3
Fruit Culture	3	3	--
Vegetable Gardening	--	--	3
Plant Life	--	4	--
Diseases of Plants	3	--	--
Entomology	--	2	3
Forge-work	2	--	--
Wood-work	--	2	2
Drill	3	3	2

WINTER SHORT COURSES IN AGRICULTURE.

One-Week Corn Course.

Begins January 4 and Ends January 10, 1911. Professor Newman, Professor Stevens, and Mr. Smith.

This course is offered in the place of the **One-week Cotton Course**, which has been given for the past two years. The work is to be strictly practical and will embrace the preparation of the soil; fertilizers for corn; mixing of fertilizers and home manures; manner and time of applying; varieties; planting; cultivation; harvesting, storing and marketing; judging and grading; seed selection and breeding; botanical characters; insect pests; fungus and bacterial diseases and their remedies.

The main object of this course will be to aid those who wish to grow more corn and better corn on less land at lower cost. Emphasis will be given soil preparation, fertilization, rotation, and the improvement of the seed by breeding and selection.

Those taking this course will have no expenses other than board and lodging. Board may be had at the Mess Hall at $2.50 per week. No examinations are required.

SEVEN WEEKS' COURSE IN GENERAL AGRICULTURE.

Begins January 12, and Ends March 2, 1911.

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, to operate dairies, fruit farms, truck and market gardens. The National Department of Agriculture, the State Experiment Stations, the Agricultural and Mechanical Colleges and the hundreds of commercial industries requiring scientifically trained men are eagerly seeking young men of such force and training as are given in the Agricultural and Mechanical Colleges. The demand is greater than the supply. The teaching of agriculture in the public schools and the organization of agricultural high schools, with agricultural instruction as an important feature, have met with a serious check for no other reason than that there are not enough trained teachers to supply the demand. This course is meant to help those (1) who want to cultivate their own farms with more knowledge and who want to keep informed as to recent improvements and recent farm literature; who (2) want to improve their teaching of agricultural subjects; who (3) want to specialize for a few weeks in some particular phase of farm industry.

EQUIPMENT.

The new Agricultural Building is devoted entirely to agriculture, and contains laboratories and class rooms built and furnished especially for the purposes for which they are used. Equipment is constantly being added and facilities for instruction become better every year. The professors in each department of the School of Agriculture are specialists in their chosen work, and are devoting their lives to study and to methods of improving rural life.

EXPENSES.

No tuition is charged for the seven weeks' course, and board may be had in the mess hall for $2.50 per week. The College will furnish lodging in the dormitories free if it has room. Students who expect to room in the dormitories should provide themselves with bed-cover, sheets, pillow-cases and towels.

While engaged in work in the dairy laboratory, students are required to wear white suits. These suits may be had at $1 apiece. The total expense of the course need not exceed $25 over and above railroad fare.

ADMISSION.

No examinations are required for entrance to the seven weeks' course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. The greater part of the instruction is given in the form of lectures and laboratory work, and the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects and others by student meetings for their mutual improvement.

The regular work of the seven weeks' course begins January 12th, and all should arrive the day before, in order that their board and room may be arranged for, so that each man may be ready for the work when it begins.

Should further information be desired, either the President or the Professor of Agriculture will take pleasure in furnishing it.

Outline of Courses.

GENERAL AGRICULTURE. 28 periods.

Professor Newman and Mr. Lunn.

Soils.—Study of origin, formation and classes of the soils of the State; their physical properties, natural and induced fertility; the tillage treatment of the different classes of soils and special tillage practice for the leading crops of the State; principles and practices of farm drainage.

Farm Equipment and Farm Management.—Selection and laying out of farm; building of farm fences, roads, houses; tools and machinery and their economic use; rotation; farming as a business.

Fertilizers.—Commercial fertilizers, farm manures, green manures; composition of fertilizers and the time and method of application; special composition for special crops; mixing of commercial fertilizers.

Farm Crops.—Selection of crops to be grown and their economic relationship in farm operations; preparation and cultivation; methods of planting; seed selection and plant breeding; studies of the staple crops; corn and cotton judging, special crops to be grown in association with the live-stock industries.

AGRICULTURAL BOTANY. 14 periods.

Professor Stevens.

This course will consist of the practical study of the diseases of plants, how to recognize them and how to prevent them; bacteria, their nature, their effects for good or harm in the farm home, and how to control them, their function in the soil as nitrogen gatherers; the cross-breeding of plants; how to accomplish it, its object, and the benefits to be derived therefrom.

FEEDS AND FEEDING AND STOCK RAISING. 21 periods.

Professor Michels.

Lectures on this subject will treat of the composition and digestibility of home-grown and commercial feeds; methods of calculating rations for different classes of farm animals, the suggestions as to the best and the most economical feeds for the different classes of live stock.

An outline will also be given of the characteristics, care, and management of the most prominent breeds of live stock.

BREEDS OF LIVE STOCK AND STOCK JUDGING. 21 periods.

Professor Michels and Mr. Arey.

Lectures on this subject will treat of the characteristics of the different breeds of dairy cattle.

The practical part of the work will be given in the judging room, where the student is required to score the animals and pass upon their respective merits.

DAIRY FARMING. Lectures, 14 periods. Laboratory, 21 periods.

Professor Michels.

Lectures are given on the nature, composition, and secretion of milk, its uses and value as a food; the production and care of sanitary milk, management of dairy herd, details in the production of high-grade cream and butter; the marketing of dairy products; and their value when sold as milk, cream, butter and cheese.

The dairy laboratory course, given in connection with the farm dairy lecture course, consists of twenty-four periods of two hours each and comprises every detail of dairy work, butter-making, retailing milk, making cottage cheese and skimmilk, buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products and standardizing milk and cream.

DAIRY EQUIPMENT.

The dairy laboratories occupy about four thousand feet of floor space on the ground floor of the new Agricultural Building, besides the locker rooms, toilet and bath-rooms on the same floor, and the dairy lecture room on the first floor, used by dairy students.

The main dairy laboratory is 36 by 57 feet and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex separators; swing and barrel hand-churns of different sizes; cream vats; hand and power butter-workers; aerators and coolers; milk testers, and other articles useful in doing farm dairy work.

Recently a new dairy barn has been erected which is a model in dairy-barn construction, embodying every feature that goes to make a barn convenient and sanitary.

DISEASES OF LIVE STOCK. 21 periods.

Professor G. A. Roberts and Mr. Hornaday.

To maintain the usefulness of animals and to advance the live-stock interests, all who handle live stock should have some knowledge of the causes of disease and the nursing of sick animals.

A general conception of the structures of the body and their uses being essential to competent judging and feeding of animals, as well as to a knowledge of disease, a short time will be given to this subject. The structures will be divided into groups, so that in a limited time one may gain a fair idea of the composition of the body. Comparisons will be made of the structures of the various farm animals with those of man. Mounted skeletons of the horse, cow and man, in the lecture room, enable the student readily to become familiar with this part of the body.

The lectures will include the care and management of live-stock to prevent disease; the nature, causes and treatment of the more common diseases and injuries.

One period each week will be devoted to a clinic where animals will be treated medicinally and operated upon. During the course there will be a practical demonstration of the tuberculin test upon the dairy herd.

HORTICULTURE. 21 periods.

Professor Reimer.

The course includes both lectures and laboratory work, and is made especially applicable to North Carolina conditions.

Fruit Culture.—Includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of our leading fruits, which deal with the kind of soil, preparation of soils for fruits, varieties, planting, cultivation, fertilization, pruning, harvesting, and marketing. Special emphasis is laid on the home fruit garden.

Vegetable Gardening.—Lectures on the best methods of growing the leading vegetables for market and home use.

Laboratory Work.—Includes practice in plant propagation, such as budding, grafting, top-grafting, pruning of fruit and ornamental trees; fruit bud studies; planting and transplanting of trees and vegetables; construction of cold frames and hot beds.

Equipment.—The Horticultural Department is well equipped for this work. The College has a very complete fruit plantation; this includes all the standard varieties of the following fruits: apple, pear, peach, plum, cherry, quince, persimmon, pecan, fig, muscadine grapes, fox grapes, raspberries, dewberries and strawberries. Also a nursery, where various methods of budding and grafting are carried on.

The department also operates a very extensive vegetable garden, supplying the College dining-room with fresh vegetables throughout the entire college year.

POULTRY RAISING. 21 periods.

Mr. Jeffrey.

The subject of poultry raising will be considered from the farm standpoint. Instruction will include lectures and work with the fowls. Students will be told what to do and how to do it, and will also be required to do the work.

Instruction will be given in poultry-house construction, the breeds of fowls best suited to the farm, their breeding, feeding and management. Egg production and the production of market poultry will receive special attention. The former will be considered both from the standpoint of breeding and feeding, and the results obtained at our own and other Experiment Stations discussed. Market poultry will include the production of broiler or frying-size chickens, roasters and capons. Incubation and brooding, both natural and artificial, will also be studied.

The Poultry Department is equipped with twenty-five breeding pens of several different types; a good incubator cellar and several different makes of incubators; a brooder-house and both indoor and outdoor brooders of both the heated and fireless types; a feed room with steam engine and both grist and bone mills. Good specimens of ten different varieties of poultry best suited to farm requirements are kept so that students may become familiar with the requirements of the different breeds.

Students wanting to specialize in poultry will be given extra work in this department, taking charge of a pen of fowls, operating an incubator, raising chicks in a brooder, and keeping all the records necessary in poultry work.

ENTOMOLOGY. 21 periods.

Professor Smith.

The course in Entomology is intended to teach students the general facts concerning the common injurious and beneficial insects, with which every one should be familiar.

Insect injury to farm crops, fruit and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully 10 per cent of the values of all agricultural products is destroyed each year, and yet there are many farmers who know very little of the habits and life-history of the most common insects. We should know how insects pass the winter, when they are most easily destroyed or prevented, and the best methods of combating them.

The course will consist of a number of lectures, illustrated by specimens, photographs and charts, to familiarize the student with the principal insects affecting general farm crops and fruit trees. Field observations will be made to study insects that may be found during January and February. The preparation and application of various spray mixtures for controlling insects, including the use of spraying apparatus, will be made a special feature of the work.

For further information, apply to C. L. NEWMAN,
Professor of Agriculture,
West Raleigh, N. C.

THE TWO-YEAR COURSE IN MECHANIC ARTS.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing	3	3	3
Wood-work	3	3	3
Forge-work	2	2	--
Foundry	--	--	2
Mechanical Technology	1	1	1
Physics	2	2	2
Arithmetic	5	--	--
Algebra	--	5	5
Preparatory English	3	3	3
Military Drill	3	3	2

Second Year.

Machine Drawing	3	3	3
Machine-shop work	3	3	3
Power Machinery	3	3	3
Algebra	5	2	--
Geometry	--	3	5
English	3	3	3
Drill	3	3	3
Elective Work:			
Machine Shop or Drawing	2	2	2
Pattern Work	--	2	2
Foundry	2	--	--

SUBJECTS OF INSTRUCTION.

Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of Descriptive Geometry; cylinders;

cones; prisms; intersections and developments; miscellaneous problems. Two periods. Required of first year short course. Mr. Selby.

Note.—Each student will be required to furnish at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale, at practically cost, the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit, $10.00:

Drawing board 21x30 inches.
T-square 30 inches.
60 degrees triangle 9 inches, transparent.
45 degrees triangle 7 inches, transparent.
12 degrees triangle, Architect's scale.

Irregular Curve.

4 H. pencil. H. or F. pencil.
Erasers for ink and pencil.
Penholder with fine points.
Pencil sharpener.

Instrument set consisting of:
6-inch compass with pen, pencil and leng.
5½-inch dividers with hair-spring adjustment.
3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
5½-inch ruling pen, 4½-inch ruling pen.

Wood-work.—The use and care of the ordinary wood-working bench tools. Exercises in laying out and working from drawings, sawing, planing and making of joints. The use and care of wood-working machines such as saws, planers, sharpers, dovetailers, tenoner, etc. Exercises in wood-turning. Work on repairs about the college. Two periods. Required of first year Short Course. Mr. Clay.

Forge-work.—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer: Special work on equipment and repairs about the College. Required of First Year Short Course. Two periods, first and second terms. Mr. Wheeler.

Foundry.—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, coremaking, management of cupola and crucible furnaces in iron and brass melting. Required of first year short course. Elective for second year Short Course. Two periods, third term. Mr. Park and Mr. Wheeler.

Mechanical Technology.—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Arrangement, sizes, and care of belting and shafting; elementary power problems, steel-making, etc. One period. Required of first year Short Course. Professor Satterfield.

SUBJECTS OF INSTRUCTION.

Second Year.

Machine Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Required of second year short course students. Two periods. Assistant Professor Ellis.

Machine-shop Work.—Bench and machine work. Exercises in shipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper-work Required of second year Short Course students. Two periods. Mr. Park.

Power Machinery.—Descriptive study of the machinery of steam power plants, engines, boilers, condensers, pumps, steam turbines, piping, care and management, study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake and boiler horse-power problems. Required of second year Short Course students. Three periods. Professor Satterfield.

Pattern-making.—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting, making of special patterns, cores and core-boxes, introducing draft, shrinkage, finish and the appliances and usages of modern pattern work. Prerequisite, Wood-work. Elective for second year Short Course students. Two periods, second and third terms. Mr. Clay and Mr. Morris.

PHYSICS.

An elementary, practical course in physics designed to meet the needs of artisans. Properties of matter; units and measures; mechanics of materials: simple machines; heat. Two periods. Required of first year men in Mechanic Arts. Mr. Latané.

MATHEMATICS.

Arithmetic.—Milne's *Standard Arithmetic.* A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Mr. Harrelson and Mr. Stephens.

Algebra.—Wells's *New Higher Algebra.* A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. Five periods, second and third terms. Professor Yates, Mr. Harrelson, and Mr. Stephens.

Second Year.

Algebra.—Wells's *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; two periods, second term. Prerequisite: For first term, entrance; for second term, the work of the first term. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

Plane Geometry.—Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Prerequisite: Entrance requirements. Mr. Richardson, Mr. Harrelson, and Mr. Stephens.

TWO-YEAR COURSE TEXTILE INDUSTRY.

The two-year course is offered to students who can not spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning	2	2	2
Weaving	3	3	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Mechanical Drawing	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Arithmetic	5	--	--
Algebra	--	5	5
English	3	3	3
Military Drill	3	3	2

Second Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Carding and Spinning	5	5	5
Warp Preparation	--	--	1
Weaving	4	4	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Dyeing	3	3	3
Machine-shop Work	2	2	2
English	3	3	3
Military Drill	3	3	2

DESCRIPTION OF SUBJECTS.

Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations,* by Tompkins: *Cotton Spinning,* by Nasmith. Required of first and second year students. Assistant Professor Parker.

Weaving.—Lectures on construction of plain, twill, sateen, gingham, pick, and pick looms are given, also construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms; construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up dobby on loom; fixing dobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production: counts of reed and cotton harness. Finishing cotton fabrics. Necessary equipment for warp preparation, weaving, finishing, approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy,* by Nelson. Required of first and second-year students. Professor Nelson and Mr. Steed.

Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain; twill; satin. Ornamentation of plain weave: color effects on plain weave. Derivative weaves: plain and fancy basket weaves: warp and filling rib weaves. Broken twills: curved twills: corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first and second year students. Professor Nelson and Mr. Steed.

Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of first and second-year students. Professor Nelson and Mr. Steed.

DRAWING AND SHOP WORK.

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing: isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of first-year students. Mr. Selby.

Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods. Required of first-year students.

MATHEMATICS.

Arithmetic.—Milne's *Standard Arithmetic.* A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Required of first-year students. Mr. Harrelson and Mr. Stephens.

Algebra.—Wells's *New Higher Algebra.* A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. Five periods, second and third terms. Required of first-year students. Professor Yates, Mr. Harrelson and Mr. Stephens.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours for first and second terms; two hours, third term. Required of first and second-year students. Commandant and Officers of the Battalion.

ADDITIONAL SUBJECTS IN THE SECOND YEAR.

Warp Preparation.—Lectures on construction of warp preparation machinery, spooler; section warper, ball warper; size kettle; slasher. Practice in operating machines. Laying out pattern warps for long and short chain beaming. Size mixing and boiling; value of ingredients used in sizing; sizing receipts for light, medium, and heavy sizing. One period, third term. Required of second-year students.

Dyeing.—The object of this course is to give the student a sound practical knowledge of the fundamental principles which underlie the arts of bleaching, dyeing, mercerizing, etc., of cotton yarns and fabrics. The manipulation of the various machines used in bleaching, dyeing and mercerizing is carefully explained. The physical and chemical properties of the material to be dyed receive first consideration, followed by a study of the adaptability of water for bleaching, dyeing, mordanting, etc. The practical application of the dyestuffs themselves is treated in the most thorough and detailed manner, *e. g.*, the substantive dyestuffs dyed direct, diazotised and developed, after-treated with metallic salts, topped with basic dyes, etc., the basic dyestuffs, sulphur dyestuffs, indanthrene dyestuffs, etc. Practice in color-mixing and matching is given. The student in this way acquires a collection of several hundred dyed samples which, when mounted in his pattern book, serve as a valuable reference. The course is supplemented by lectures, which will include the consideration of many difficult problems that arise in the dye-house. Three periods. Required of second-year students. Mr. Halstead.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of second-year students. Mr. Park.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Stondard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor Harrison, Doctor Summey. and Mr. Faulkner.

Normal Courses.

I. For Rural Teachers:
- (a) Two-year Course.
- (b) One-year Course.
- (c) A Two-weeks Spring Course.

II. For City Teachers:
- (a) Two-year Course.
- (b) One-year Course.
- (c) A Two-weeks Spring Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and the College has a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The Courses for Rural Teachers are devoted largely to agriculture and nature study; the Courses for City Teachers, to drawing and manual training. Each of these courses also includes a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The exercises in the Normal Courses are the same as in the other courses of the College, except in the May School.

The Normal Courses are as follows:

I. Courses for Rural Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

SUBJECTS.		PERIODS A WEEK.		
		1st Term.	2d Term.	3d Term.
Agriculture		3	3	3
Nature Study	Plants	3	3	3
	Animals	3	3	3
English		3	3	3
Mathematics		5	5	5
Military Drill		3	3	2

Second Year.

Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
History	2	2	2
Military Drill	3	3	2

(*b*) ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Methods of Teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	--	--
Diseases of Live-stock	--	5	--
Botany	3	--	--
Poultry	--	3	3
Entomology	--	--	3
Diseases of Plants	--	--	2
Agricultural Literature	1	1	1

Elective in any College department, *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing, and others.

II. Courses for City Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

Drawing	2	2	2
Wood-work	1	1	1
Forge-work	1	1	1
Mechanical Technology	1	1	1
Algebra and Geometry	5	5	5
English	3	3	3
History	2	2	2
Drill	3	3	2

Elective, 3 periods required: Physics 2, Nature Study (Plants) 3, Nature Study (Animals) 3.

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Drawing	2	2	2
Wood-work	4	4	4
Forge-work	1	1	1
English	2	2	2
Architecture and Descriptive Geometry	2	2	2
Architectural Drawing	2	2	2
Geometry and Trigonometry	5	5	5
Military Drill	3	3	2

Elective, at least 2 periods required: Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Descriptive Geometry 2, Plant Diseases, Human Physiology 3, Physiological Botany 3.

(*b*) ONE YEAR COURSE.

Drawing	3	4	4
Wood-work	4	5	5
Forge-work	2	2	2
Architecture	2	--	--
Architectural Drawing	2	2	2
Algebra and Geometry	5	5	5
Military Drill	3	3	2

Elective: Physics 2, English (132) 3, English (133 and 135) 2, History 2, Nature Study (Plants) 3, Nature Study (Animals) 3, Chemistry 3, Chemical Laboratory 2, Electricity and Magnetism 2, Plant Diseases 3, Human Physiology 3, Physiological Botany 3, Geometry and Trigonometry 4, Descriptive Geometry 2.

THE MAY SCHOOL FOR TEACHERS.

May 16 to 28, 1910.

Agriculture, Nature Study and Common Branches.—This course is designed to meet the needs of teachers of the public, common and high schools who desire more preparation in Nature Study and Agriculture. Attention is also given to school gardens. The common branches are reviewed. Attendance here meets the legal requirement of attendance at an institute once in each two years.

The laboratories, library, specimens and all other equipment of the College are at the service of students of this course, affording an excellent opportunity for instruction.

The work is so arranged that teachers desiring to devote all of their time to Agriculture and Nature Study can do so, while those teachers wishing to devote part of their time to Agriculture and Nature Study and part to the common branches can pursue this course.

Instruction will be offered in the following subjects, from which election may be made to best meet particular needs:

Elementary Agriculture and Nature Study, Prof. F. L. Stevens.
School Management, Supt. Z. V. Judd.
School Gardens, Supt. F. M. Harper.
Farm Crops, Prof. C. L. Newman.
Farm Animals, Mr. J. A Arey.
Horticulture, Prof. F. C. Reimer.
Insects, Mr. R. I. Smith.
Poultry, Mr. J. S. Jeffrey.

Arithmetic, English, History, etc., will be taught by the regular instructors of the College.

No fees are charged for this course. Board may be had at $2.50 a week and lodging at about $1 a week.

Only a limited number can be accommodated. Rooms must be engaged in advance.

For particulars and reservation, write to

F. L. STEVENS, Superintendent,
West Raleigh.

Donations.

To the Chemistry Department.

Standard Oil Company of New York.—A dozen samples representing crude petroleum and the products obtained.

Armour & Co., of Chicago, Ill.—Some samples of fertilizing materials.

Donations to Textile Department.

Leisel Co., Greensboro, N. C.—Dye house equipment.

Scott & Williams, Philadelphia.—One combination ribber and footer machine.

Hemphill Manufacturing Co., Pawtucket, R. I.—One "Banner" knitting machine.

Grosser Knitting Machine Co., New York.—One looper.

Wildman Manufacturing Co., Norristown, Pa.—One ribber.

Thomas Halton's Sons, Philadelphia.—One crochet quilt jacquard.

Caldwell & Gilderd, Fall River, Mass.—One electric warp stop motion.

Draper Company, Hopedale, Mass.—Bobbins and loom supplies.

Emmons Loom Harness Co., Lawrence, Mass.—Reeds and harness.

Holyoke Belting Co., Holyoke, Mass.—Cone belts.

New York and New Jersey Lubricant Co., New York.—Samples nonfluid oils.

Champlain Silk Mills, Whitehall, N. Y.—Two pounds silk yarn.

Hampton Manufacturing Co., Easthampton, Mass.—Mercerized cotton yarns.

Elizabeth Mills, Charlotte, N. C.—Yarn on cones.

C. R. Judge Knot-tier Co., Lowell, Mass.—Four knot-tiers.

Textile Manufacturer, Charlotte, N. C.

Mill News, Charlotte, N. C.

Wool and Cotton Reporter, Boston, Mass.

Fibre and Fabric, Boston, Mass.

Textile Manufacturers Journal, New York.

Journal of Commerce, New York.

New York Commercial, New York.

To the Poultry Department.

Y. E. Smith, East Durham.—White Plymouth Rock cockerel.

Park & Pollard, Boston, Mass.—Six brooders.

Donations to Mechanical Department.

2 H. P. McVicker gasoline engine, by Alma Manufacturing Company, Alma, Mich.

2 H. P. International gasoline engine, by International Harvester Company.

Injectors by—

Sellers Injector Company, Philadelphia.
Penberthy Injector Company, Detroit, Mich.
Lunhenheimer Injector Company, Cincinnati, O.
Hayden & Darby Co., New York.

Model Pump, by A. S. Cannon Pump Company, New York City.

Model of valve motion on Lentz Engine, by Erie Iron Works, Erie, Pa.

Handbooks, catalogs, etc., from several companies for use in class.

To Agricultural Department.

The Oaks Manufacturing Company, of New Bern, a cotton and corn planter and fertilizer distributor.

The National Department of Agriculture, an economic collection of 100 kinds of weed seeds.

Cotton seed, by W. A. Simpkins.

Seed corn, by J. F. Batts.

To the Department of Physics and Electrical Engineering.

W. K. Vanderbilt, Biltmore, N. C.—A Queen photometor with standard lamp and accessories.

To the Civil Engineering Department.

Seba Eldridge.—The Science of Railways by Kirkman (14 volumes).

Catalogue of Students.

GRADUATES.

Name.	*Post-office.*	*Course.*
John Allen Arey, B. S.,	Elmwood,	Agr.
Percy Leigh Gainey, B. Agr.,	Fayetteville, R. 7,	Agr.
Bascombe Britt Higgins, B. S.,	Leicester, R. 2,	Agr.
Wayne Arington Hornaday, B. S.,	Burlington,	Agr.
Robert Irving Howard, B. E.,	Tarboro,	C. E.
Ralph Long, B. S.,	Graham,	Agr.
William Flaud Morris, B. E.,	Asheboro,	M. E.
Robert Richard Reinhardt, B. S.,	Stanley Creek,	Agr.
Francis Webber Sherwood, B. S.,	Raleigh,	Chem.
Samuel Fatio Stephens, B. E.,	Norfolk, Va.,	C. E.

SENIOR CLASS.

Alfred Scales Armfield,	Statesville,	Tex.
Robert Kenneth Babington,	Gastonia,	E. E.
Fred McCullough Black,	Mooresville,	E. E.
Thomas Sawyer Bond,	Windsor,	C. E.
Roy Bowditch,	Bakersville,	E. E.
Carl Ray Bradley,	Old Fort,	E. E.
John Benjamin Bray,	Sligo,	C. E.
Thomas Johnson Brevard,	Fairview,	Agr.
Thomas Kincaid Bruner,	Raleigh,	Tex.
Elton Elroy Buck,	Hampton, Va.,	C. E.
Henry Caleb Clay,	Hickory,	M. E.
John Monroe Council,	Wananish,	E. E.
William Henry Crow,	Monroe,	E. E.
William Earle Davis,	Hiddenite,	E. E.
Thomas Theodore Dawson,	Grifton,	C. E.
James Leonidas Dunn,	Scotland Neck,	Agr.
Walter Frederick Eller,	Berlin,	M. E.
Rufus Eugene Forbis,	West Raleigh,	M. E.
Elmo Vernon Freeman,	Wake Forest,	E. E.
James Jervy Gantt,	Charleston, S. C.,	C. E.
Ransom Eaton Gill,	Raleigh,	E. E.
James Miller Gray,	Cullasaja,	Agr.
Frank Hawks,	Kinston,	M. E.
Ernest Albert Haynes,	Raleigh,	C. E.

Name.	*Post-office.*	*Course.*
Edmund Burke Haywood,	Raleigh,	C. E.
Rufus Williams Hicks, Jr.,	Wilmington,	M. E.
Lyda Alexander Higgins,	Leicester, R. 2,	Agr.
Louie Lee Hood,	Asheville,	C. E.
Robert Frank Jones,	Washington,	C. E.
Clyde Raymond Jordan,	Gulf,	E. E.
Luther Hill Kirby,	Lenoir,	C. E.
Mark Clinton Lasitter,	Snow Hill,	C. E.
Eugene Talmage Lee,	Dunn,	C. E.
Ulphian Carr Loftin,	West Raleigh,	Agr.
Frank Neely McDowell,	Charlotte,	Agr.
Lennox Polk McLendon,	Wadesboro,	Agr.
William Leake Manning,	Henderson,	E. E.
Melvin Solomon Mayes,	Stem,	M. E.
Leon Davis Moody,	East Laporte,	M. E.
Eugene Boise Moore,	Morven,	E. E.
Robert Lee Morgan,	Wilson,	M. E.
Harry Yeomans Mott,	Mooresville,	Agr.
William McCormick Neale,	Greensboro,	M. E.
Joe Baxter Parks,	Concord,	E. E.
William Casper Pennington,	Thomasville,	M. E.
William Ransome Phillips,	Dunn,	E. E.
James Bruce Price,	Leaksville,	E. E.
Jay Frederick Robinson,	Hampton, Va.,	C. E.
Carl Collins Sadler,	Charlotte,	C. E.
Earle Aloysius Seidenspinner,	Washington, D. C.,	Chem.
John Waldorf Sexton,	Asheboro,	C. E.
Edwin Harrison Smith,	Weldon,	C. E.
John Francis Speight,	Whitakers,	C. E.
St. Julian Lachicotte Springs,	Georgetown, S. C.,	Agr.
Charles Burt Stainback,	Henderson,	E. E.
Harris Ingram Stanback,	Mt. Gilead,	E. E.
Thomas Barnes Stansel,	Allenton,	Chem.
Herbert Nathaniel Steed,	Steeds,	Tex.
William Clark Styron,	Washington,	M. E.
Thomas Bryan Summerlin,	Mt. Olive,	Tex.
Lloyd Hurst Swindell,	Raleigh,	Tex.
Frank Martin Thompson,	Raleigh,	Tex.
Thomas Hampton Thompson,	Thomasville,	M. E.
Isaac Norris Tull,	Kinston,	E. E.
Charles Emmette Walton,	Hamilton, Ga.,	E. E.
Howard W. Welles, Jr.,	Poughkeepsie, N. Y.,	E. E.
Edward Leigh Winslow,	Hertford,	C. E.

JUNIOR CLASS.

Name.	*Post-office.*	*Course.*
William Bailey,	Raleigh,	E. E.
Tollie Chester Barber,	Pinnacle,	Tex.
Carson Devane Baucom,	Raleigh,	E. E.
John Mann Beal,	Rocky Mount, R. 3,	Agr.
Charles Edward Bell,	Morehead City,	Chem.
Hinton Quinerly Best,	Grifton,	Chem.
Rufus Tucker Boylan,	Raleigh,	Agr.
Oren Bradfield Brodie,	Raleigh,	Agr.
Joel Edward Brown,	Pendleton, S. C.,	C. E.
James Howard Brown,	Charlotte, R. 4,	Agr.
William Bachman Brown,	Glass,	C. E.
Guy Kedar Bryan,	Tampa, Fla.,	C. E.
Kit Bryan,	Catherine Lake, R. 1,	C. E.
Henry Carl Buchan,	Manly,	Agr.
Von Porter Byrum,	Charlotte,	M. E.
Henry Roy Cates,	Swepsonville,	Agr.
John Downie Cooper, Jr.,	Henderson,	Tex.
Charles Lee Cruse,	Spencer,	Agr.
William Hurd Davis,	Marshville, R. 1,	E. E.
Edwin Gray Deans,	Wilson,	Tex.
Edwin Sexton Dewar,	Raleigh,	Chem.
Clifton Abraham Dukes,	Branchville, S. C.,	Agr.
John Ivey Eason,	Stantonsburg, R. 1,	Agr.
Earl Montier Evans,	Raleigh,	M. E.
Robert Stackhouse Fairly,	Laurinburg,	Agr.
James Grey Fennell,	Wilmington,	E. E.
George Winbury Gillette,	Marines,	E. E.
Robert Walter Graeber,	Concord,	Agr.
William James Hall,	Clemmons,	M. E.
Thomas Devin Harris,	Oxford,	C. E.
David Raymond Hinkle,	Lexington,	Tex.
Thomas Pinckney Lovelace,	Forest City,	E. E.
Hal McCoy,	Asheville,	Chem.
Eugene Richard McCracken,	Graham,	Tex.
Sidney McDonald,	Wilmington,	C. E.
Joseph Jenkins Mackay,	Raleigh,	E. E.
Charles McKimmon,	Raleigh,	Chem.
Jacob Lee Martin,	Graham,	C. E.
Robert Lee Morrison,	Concord,	C. E.
Fred Taylor Peden,	Wilkesboro,	Agr.

Name.	*Post-office.*	*Course.*
John Taylor Peden,	Wilkesboro,	E. E.
Silas Bruce Phifer,	Cleveland R. 2,	E. E.
Paul Nathaniel Pittenger,	Raleigh,	E. E.
Josephus Plummer Quinerly,	Grifton,	Agr.
John Wesley Rollinson,	Elizabeth City,	E. E.
George Romulus Ross,	Asheboro,	Agr.
Graeme William Ross,	Charlotte,	E. E.
John Leonidas Scott, Jr.,	Graham,	Tex.
James Morgan Sherman,	Ash Grove, Va.,	Agr.
Ira Short,	Boardman,	M. E.
Orin Morrow Sigmon,	Hickory,	M. E.
Ernest Lytch Smith,	Laurinburg,	Agr.
Charlie Augustine Speas,	Cana, R. 2,	C. E.
Lucius Esek Steere, Jr.,	Charlotte,	E. E.
George Logan Thompson,	Goldsboro,	E. E.
Thomas Whitmell Thorne,	Littleton,	M. E.
Fred Goode Tucker,	Henderson,	C. E.
Edwin Thomas Wadsworth,	Charlotte,	E. E.
James Hunter Watson,	Raleigh,	Chem.
Walter Booker Winfree,	Wadesboro, R. 3,	Agr.
Marion Fuller Wyatt,	Raleigh,	M. E.

SOPHOMORE CLASS.

Stuart Star Abell,	Levyville, S. C.,	M. E.
Neily Ormond Alexander,	Matthews, R. 17,	Agr.
Thomas Roper Baldwin,	Mount Gilead,	Tex.
John Edd Beaman,	Clinton,	C. E.
William Hunter Bingham,	Concord,	E. E.
William Edward Blair, Jr.,	Buffalo N. Y.,	Agr.
Allison Hodges Bond,	Fayetteville,	M. E.
Charles Carroll Bost, Jr.,	Hickory,	C. E.
Alan Thurman Bowler,	Sanford, Fla.,	C. E.
Clayton Edward Brown,	Chocowinity,	C. E.
Stephen Cole Bruner,	Raleigh,	Agr.
Glaucus Alexander Bryant,	Wilson,	C. E.
Brice Legrier Caldwell,	Concord,	Chem.
Price Caldwell,	Huntersville, R. 23,	E. E.
Ralph Campbell Deal,	Concord,	E. E.
Ernest Cofield Derby,	Rocky Mount,	C. E.
McNeely DuBose,	Morganton,	E. E.

Name.	*Post-office.*	*Course.*
Amzi Jefferson Ellington,	Raleigh,	Chem.
Percy Bell Ferebee,	Elizabeth City,	E. E.
Richard Giersch,	Raleigh,	E. E.
William Haywood Graham, Jr.,	Rowland,	E. E.
John Krause Gunn,	Tampa, Fla.,	E. E.
Charles Ganzer Hall,	Wilmington,	Tex.
Robert McKenzie Hardison,	Morven,	C. E.
Harry Hartsell,	Asheville,	E. E.
Willis Askew Holding,	Raleigh,	Chem.
Sidney Willard Holman,	Raleigh,	E. E.
Samuel Benjamin Howard,	Morganton,	M. E.
Ralph Wilkinson Howell,	Belhaven,	Agr.
James Roy Hutchinson,	Charlotte R. 7,	Tex.
John Ray Ivey,	New London,	E. E.
William Lee Jenkins,	Aulander,	E. E.
John Gordon Kellogg,	Sunbury,	Agr.
Sam Jones Kirby,	Selma, R. 1,	Agr.
Marion Bryan Koonce,	Kinston,	M. E.
Carl Joshua Lambeth,	Thomasville,	M. E.
Curtis Williams Lee,	Monroe,	M. E.
Edwin Payne Lore,	Concord,	E. E.
James Edward McGee,	Mt. Olive,	Tex.
Thomas Hunt Mackie,	Yadkinville,	E. E.
Arthur McKimmon,	Raleigh,	Chem.
Neill McQueen,	Fayetteville,	Tex.
Walter Ray Mann,	East Cleveland, Ohio,	Agr.
John Gideon Matthews,	Blackwell, S. C.,	Agr.
Henry Bascom Mercer,	Wilmington,	C. E.
Ronald Earl Mewborn,	Kinston,	M. E.
Simon Turner Mitchiner,	Garner,	M. E.
James Richard Mullen,	Charlotte,	E. E.
Harry Peachey Murray,	Charlotte,	E. E.
Charles McKee Newcomb,	Raleigh,	C. E.
Leonard Oettinger,	Kinston,	Tex.
Charlie Washington Owens,	Saratoga, R. 1,	C. E.
Alexander Holladay Pickel,	Raleigh,	E. E.
Bryant Monroe Potter,	Southport,	C. E.
Wade Hampton Reinhardt,	Stanley,	Agr
John Calhoun Riddick,	Scotland Neck,	Tex.
Louis Napoleon Riggan,	Raleigh,	C. E.
David Walter Seifert,	New Bern,	C. E.

Name.	*Post-office.*	*Course.*
MURRAY MANSFIELD SESSOMS,	Windsor,	E. E.
FLEMING BATES SHERWOOD,	Raleigh,	Chem.
WILLIAM TALMAGE SHULL,	Beaufort,	C. E.
JAMES MCCREE SMITH,	Rutherfordton,	Agr.
ORUS WILDER SMITH,	Kipling,	M. E.
EDWARD PINKNEY SPEER,	Boonville,	E. E.
DAVIS BRYANT SPIERS,	Como,	Agr.
TALMAGE HOLT STAFFORD,	West Raleigh,	Agr.
CLARENCE ALEXANDER STEDMAN,	Greensboro,	Chem.
NEEDHAM BRYAN STEVENS,	Goldsboro,	Agr.
DAVID BRUCE STURGILL,	Piney Creek,	C. E.
MORGAN FRANKLIN SUGG,	Kinston,	Tex.
WILLIAM PERRY SUGG,	Princeton,	C. E.
ARTHUR WILLIS TAYLOR,	Raleigh,	M. E.
CULVER MURAT TAYLOR,	Tarboro,	E. E.
HERBERT LEE TAYLOR,	Raleigh,	M. E.
JOHN SAM THOMPSON,	Lewiston,	Agr.
GROVER CLEVELAND TILLEY,	Rougemont,	M. E.
GEORGE REID TROTTER,	Charlotte,	E. E.
CHARLES J. VALAER,	Winston-Salem,	C. E.
ROBERT TERRY WADE,	Morehead City,	C. E.
HARRY MOORE WALTON,	Morganton,	E. E.
HUGH POWELL WHITTED,	Mebane,	C. E.
WALLACE WOODSON WILLIAMS,	Raleigh,	Chem.
WILFRED T. WILLSON,	Gold Hill,	E. E.

FRESHMAN CLASS.

DERBIN LINWOOD ALLEN,	Wake Forest,	M. E.
LEWIS ALLEN AMMONS,	Marshall, R. 4,	Agr.
CHARLES SIDNEY ANDREWS,	Kinston,	M. E.
ROBERT HOLT ARDREY,	Pineville,	Agr.
GILBERT LUTHER ARTHUR, JR.,	Morehead City,	M. E.
CHARLES ALLEN BABBITT,	Bayboro,	E. E.
CHARLES ALBION BACHE,	Live Oak, Fla.,	E. E.
ROGER MOORE BAILEY,	Elm City,	Agr.
GRADY LEE BAIN,	Greensboro,	C. E.
RANY BAYNES,	Bushy Fork,	E. E.
WILLIAM CRAIGE PINKNEY BETHEL,	Norfolk, Va.,	Tex.
WILLIAM NEAL BLANTON,	Marion,	E. E.
WILLIAM LESLIE BLOOMER,	Old Fort,	E. E.

Name.	*Post-office.*	*Course.*
Charles Keener Boone,	Lumberton, R. 2,	Agr.
Edwin Dennis Bowditch,	Toecane,	Agr.
John Warren Bradfield, Jr.,	Charlotte,	M. E.
Julian Chisholm Brantley,	Spring Hope,	Agr.
George Wallace Brice,	Wilson,	E. E.
Herman Burke Briggs,	West Raleigh,	M. E.
Horace Furman Burge,	Hillgirt,	E. E.
Henry Albert Buslinger,	Roanoke Rapids,	E. E.
Augustin Kennard Buxton,	Charlotte,	E. E.
Irwin Clark,	Scotland Neck,	E. E.
Miles Lyman Clark,	Hampton, Va.,	E. E.
Amos Baxter Clement,	Oxford, R. 1,	E. E.
William Randolph Clements,	Raleigh,	E. E.
William Anthony Coble,	Waynesville,	E. E.
Thomas Alexander Cole,	Cole's Mills,	Agr.
Samuel Brady Coley,	Winston-Salem,	C. E.
John Burke Coward,	Webster,	E. E.
James Franklin Crowell,	Concord,	E. E.
Liston Lloyd Dail,	Chinquapin,	Chem.
Maxey Ulam Daniel,	Roxboro,	E. E.
Paul D. Davis,	Fremont,	C. E.
John Jennings Dunlap,	Wadesboro,	Agr.
Jonathan Evans Elliott, Jr.,	Thornwall,	Agr.
John Bartlett Fearing,	Elizabeth City,	E. E.
John Gilmer Feezor,	Silver Hill, R. 1,	E. E.
Daniel Burnie Floyd,	Fairmont,	M. E.
Elbert Jones Garrett,	Roxboro, R. 4,	M. E.
Thomas Fenner Gibson,	Red Springs,	C. E.
Roy Durant Goodman,	Concord, R. 2,	Agr.
Cicero Fred Gore,	Wilmington,	C. E.
David Swain Grant,	Asheville,	C. E.
Augustus Tompkins Graydon,	Charlotte,	M. E.
William Henry Griffin, Jr.,	Goldsboro,	C. E.
Felix Stanton Hales,	Wilson,	E. E.
David McKee Hall,	Webster,	Agr.
LeRoy Corbett Hand,	Chadbourn,	Tex.
Jack Wilson Hardie,	Brown Summit, R. 2,	M. E.
Henry Spooner Harrison, Jr.,	Enfield,	Agr.
Thomas Roy Hart,	Monroe,	Tex.
Walter Ingram Haywood,	Mt. Gilead,	E. E.
Earnest Eccles Hedrick,	Lexington,	E. E.
Thomas Jasper Hewitt,	Newport, R. 2,	C. E.

Name.	*Post-office.*	*Course.*
Riley Weaver Higgins,	Leicester, R. 1,	Agr.
Peter Armstrong Holt,	Graham,	Agr.
Walter Cleary Hopkins,	Newport News, Va.,	C. E.
Carl Horn,	Rutherfordton,	Tex.
Thomas Jones Hoskins, Jr.,	Edenton,	Agr.
Frank Henry Houck,	Raleigh,	C. E.
Ernest Boyd Hunter,	Charlotte,	C. E.
Ernest Judson Jeffress,	Canton,	E. E.
Douglass Creelman Jeffrey,	West Raleigh,	C. E.
David Ufford Jennings,	Greenwood, S. C.,	Tex.
Joseph Benjamin Johnson, Jr.,	Georgetown, S. C.,	Agr.
James Wright Johnson,	Garland,	E. E.
William Manley Jones,	Raleigh,	C. E.
Joseph Drewry Joyner,	Franklinton,	E. E.
Sir Keith Keller,	Wadesboro,	C. E.
George Edison Kidd,	Charlotte,	E. E.
John Raymond Kiker,	Polkton, R. 2,	Agr.
Louis Braswell Knight,	Tarboro, R. 1,	Agr.
Robert Efland Labberton,	Winston-Salem,	E. E.
Nathan Sampson Lachicotte,	Waverly Mills, S. C.,	Chem.
Everett Bruce Lassiter,	Potceasi,	E. E.
William Cornelius Lassiter,	Potecasi,	Tex.
Edgar Clark Latham,	Plymouth,	E. E.
Laurence Tyson Lee,	Raleigh,	Chem
James Ivor McCallum,	Charlotte,	C. E.
Frank Whiteside McComb,	Hickory,	M. E.
Charles Frederick McIntyre,	Troy,	Agr.
Holly A. McNairy,	Pomona,	Agr.
Andrew Thomas Madra,	Tarboro,	E. E.
Wilson Benson Marsh,	Marshville, R. 1,	Agr.
Robert Sylvanus Mauney,	Murphy, R. 1,	C. E.
John Brent Mayes, Jr.,	Stem,	Agr.
Robert Tolar Melvin,	White Oak,	Agr.
Thomas Kenneth Mial,	Raleigh,	M. E.
William Carson Motz,	Lincolnton,	C. E.
William Timothy Nixon,	Sunbury,	Agr.
Edward Raymond Norris,	Hampton, Va.,	M. E.
Richard Eastwood Page,	Biscoe,	M. E.
James Marcus Parker,	Lasker,	Agr.
Walter Herbert Parker,	Rocky Mount,	M. E.
Millard LaFayette Parker,	Raleigh,	E. E.

Name.	*Post-office.*	*Course.*
Thad Rowland Parrish,	Middleburg,	E. E.
Melzor Love Pearsall,	Wilmington,	Tex.
Lindsay M. Phelps,	Plymouth,	E. E.
Fred Davis Poisson,	Wilmington,	M. E.
Robert Jackson Powell,	Whiteville,	Agr.
Peter Powers, Jr.,	Cary,	Agr.
Edgar Bragg Price,	Bath,	M. E.
Thomas Hector Purcell,	Maxton, R. 2,	Tex.
Henry Aubrey Quickel,	Lincolnton,	Tex.
Daniel Weldon Ramsaur,	Lincolnton, R. 2,	Agr.
John Olan Rankin, Jr.,	Gastonia,	Agr.
George Gahagan Reeves,	Walnut,	M. E.
Ivey Goodman Riddick,	Raleigh,	Chem.
Davis Aydlett Robertson,	Portsmouth, Va.,	Agr.
Gilvin Theodore Roth,	Elkin,	E. E.
Garland Thomas Rowland,	Middleburg,	C. E.
William Ransom Sanders,	Smithfield,	Tex.
James Baxter Sarratt,	Charlotte,	Tex.
George Garrard Schmidt,	Indianapolis, Ind.,	C. E.
Edwin Donnell Scott,	Graham,	Tex.
Earnest Linwood Sherlock,	Elizabeth City, R. 1,	Agr.
Patrick Columbus Simmons,	Fairfield,	M. E.
Robert Lee Sloan,	Charlotte, R. 5,	Agr.
James Charles Small,	Elizabeth City,	Agr.
Richard Henry Small,	Norfolk, Va.,	C. E.
Francis Clark Smith,	New Bern,	C. E.
Colin George Spencer,	Asheboro,	Agr.
John Brown Steele,	Yadkin Valley,	Agr.
William Beaver Stover,	Granite Quarry,	E. E.
Charlie Berryhill Stowe,	Charlotte, R. 4,	Agr.
Nathaniel Henry Street, Jr.,	New Bern,	Tex.
William Henry Sullivan,	Greensboro,	M. E.
Stanton Banks Sykes,	Efland, R. 2,	E. E.
Henry Jesse Vann,	Wilmington,	C. E.
William Henry Von Eberstein,	Chocowinity, R. 1,	Agr.
Robert Pennel Walker, Jr.,	Barnard,	E. E.
Robert Moore White,	Norlina,	Tex.
Tom Brem Williams,	Mooresville,	Agr.
Alvin Chesley Wilson,	Raleigh,	E. E.
Daniel Grady Wilson,	Linwood, R. 1,	Agr.
Sol Woolard,	Tarboro,	C. E.
Matt Ransom Yarborough,	Monroe,	Agr.

IRREGULAR.

Name.	*Post-office.*	*Course.*
Kung Chao Chu,	Nankin, China,	1 Yr., Agr.
Roscoe Walter Dent,	Lehigh, Penn.,	M. E.
James Henry Durham, Jr.,	Wilmington,	Min.
Joseph Oscar Green,	Franklinton,	Agr.
Dever Little,	Gaffney, S. C.,	Tex.
Edward Murray,	Raleigh,	Tex.
Fred Barnett Wheeler,	Archdale,	M. E.

TWO-YEAR COURSES.

First Year.

Hal Barber Bahnson,	Farmington,	Tex.
Fred Rush Bost,	Concord,	M. A.
Carey Parks Buchanan,	Charlotte,	Tex.
Charles Calloway,	Franklin,	Tex.
Leslie Manning Christian,	Durham,	M. A.
Carroll Bertrand Fagan,	Darden,	M. A.
Edward Bynum Gaskill,	Tarboro,	M. A.
Henry Lee Grant, Jr.,	Manteo,	M. A.
William Tisdale Hurtt,	New Bern,	M. A.
Paul Martin Johnson,	Mount Airy,	M. A.
Charlie Cook Kearney,	Franklinton,	M. A.
Frank Albert Kendall,	Ansonville, R. 1,	M. A.
Henry Grady Lipe,	Matthews, R. 19,	M. A.
Leewood McCallum,	Rowland,	Tex.
Errol DeWitt Morton,	Roxboro, R. 3,	M. A.
Edgar Byron Nichols,	Mount Airy, R. 3,	M. A.
Herbert Burns Norris,	Raleigh,	M. A.
Benjamin Harvey Parker,	Lasker,	M. A.
Charlie Homer Paylor,	Greensboro,	M. A.
Joseph Jennings Phillips,	Portsmouth, Va.,	M. A.
Henry Marion Pope,	Durham, R. 2,	M. A.
James Dennis Pope,	Durham, R. 2,	M. A.
John B. Ross,	Sanford,	M. A.
Clement Oscar Seifert,	New Bern,	M. A.
John Earle Shute,	Monroe,	M. A.
Walter Herbert Smith,	Prospect Hill, R. 1,	M. A.
Roy Clinton Stockwell,	Raleigh,	M. A.
Bruce Strowd,	Chapel Hill,	M. A.
John Thompson,	Thomasville,	M. A.

Name.	*Post-office.*	*Course.*
James Baxter Tickle,	Elon College, R. 1,	M. A.
Thomas Settle Tucker,	Fair Bluff,	M. A.
Clarence Leo Underwood,	Newton Grove,	M. A.
Mebane Strange White,	Mebane, R. 3,	M. A.
Heber Jourdin Wilkinson,	Belhaven,	M. A.
John Davis Willis,	Morehead City,	M. A.
Charles Conley Wilson,	Morganton, R. 1,	M. A.
George Hopton Wilson,	Goldsboro,	Tex.
Henry Hall Wilson,	Monroe,	M. A.
John Wilds Wilson,	Johnson City, Tenn.,	M. A.
Warren Edmundson Winslow,	Goldsboro,	M. A.
Clem Covington Yarborough,	Locust Hill,	M. A.

TWO-YEAR COURSES.

Second Year.

Robert Bencini,	High Point,	Tex.
Turner Bond Cooper,	Windsor,	M. A.
John C. Cosby,	Asheville,	Tex.
Arthur Leroy Faulkner,	Smithfield,	Tex.
John Means Harden, Jr.,	Winnsboro, S. C.,	M. A.
Albert Louis Keasler,	Anderson, S. C.,	M. A.
James Douglas Lytch,	Laurinburg,	M. A.
Charles Wayland Spruill, Jr.,	Quitsna,	Tex.
Henry Battle Tice,	Wadesboro,	M. A.
Robert Grady White,	Concord,	Tex.

ONE-YEAR COURSE IN AGRICULTURE.

Charlie Meekins Brickhouse,	Columbia.
Harold Charles Brim,	Swan Quarter.
Harley Wilson Bullard,	Chadbourn, R. 2.
John Alexander Byrne, Jr.,	Red Springs.
Eugene Moore Conrad,	Pfafftown, R. 1.
Neilson Falls, Jr.,	Washington, D. C.
George Alexander Forsyth,	Greensboro, R. 6.
Lee Fries Franklin,	Mount Airy, R. 3.
James Thomas Garvey,	Beaver Creek, R. 1.
Grover Cleveland Glenn,	Arden.
Leonard Parks Hardy,	Seven Springs.
Robert Ward Johnson,	Plymouth.
William Pall Lucas,	Plymouth, R. 1.

Name.	*Post-office.*
Archie Braswell Knight,	Tarboro.
John Elvis Lynch,	Durham, R. 5.
Cecil Blackstock McElroy,	Stocksville.
Joseph Perry McNider,	Winfall, R. 1.
Edward Napoleon Murray,	Fairfield.
Neal Arch Odum,	Pembroke, R. 1.
Ernest Linwood Perkins,	Adako.
Robert McLean Pitts,	Selma, Ala.
Maurice Fels Poole,	Randleman, R. 3.
Luby Whitley Stevens,	Goldsboro, R. 4.
Carl Alexander Thompson,	Fairmont.
Braxton Milton Weston,	Swan Quarter, R. 1.

WORK COURSE—AGRICULTURAL.

Job Swain Barnard,	Asheville, R. 1.
Samuel Conner Brim,	Mount Airy.
James Patie Carter,	Buckhorn.
Titus Edward Chappell,	Tyner.
Thomas Jefferson Croom,	Colly.
John Ellis Dodson,	Greensboro, R. 2.
John Ray Eaton,	Cana, R. 2.
Timothy Francis Eaton,	Cana, R. 2.
David Kerr Fleming,	Bahama, R. 1.
Alvin Edwin Gunn,	Wentworth, R. 1.
Archie Phelps Hobbs,	Windsor.
Julian Thomas Hughes,	Snow Hill, R. 1.
William Dantzlier Jernigan,	Maxton, R. 2.
Alexander McNeill,	Wade.
Russell Lany Mitchell,	Dillard.
Carroll Clarence Morgan,	Candler.
Jesse Murray,	Burgaw, R. 2.
John Thomas Newton,	Canton,
William Crawford Pope,	Barium Springs.
John Allen Rhem,	Halifax, R. 1.
James Edwin Scott,	Haw River, R. 2.
Ralph Sharpe,	Barium Springs.
Jesse Bryan Wethington,	Grifton, R. 1.
John William Williamson,	Archer, R. 1.
Burton Hudson Wood,	Lincolnton, R. 1.

WINTER COURSE IN AGRICULTURE.

Name.	*Address.*	*County.*	*State.*
James Bayard Allen,	Henderson,	Vance,	N. C.
Thomas Nathaniel Allen,	Laws,	Durham,	N. C.
Earl Emmette Allison,	Concord,	Cabarrus,	N. C.
Henry Beatty,	Gravel Hill,	Bladen,	N. C.
Carlos Randolph Berry,	Swan Quarter,	Hyde,	N. C.
Nath'l Daniel Boyd,	Townesville,	Vance,	N. C.
James Louis Britt,	Garner,	Wake,	N. C.
Junius Pettigrew Chamblee,	Spring Hope,	Nash,	N. C.
Clarence Brevard Choate,	Pineville,	Mecklenburg,	N. C.
Mills Cline,	Shelby,	Cleveland,	N. C.
Thomas Clyde Dalrymple,	Jonesboro,	Lee,	N. C.
Benjamin Garden Deans,	Middlesex,	Nash,	N. C.
John Thomas Dixon,	Lowell,	Gaston,	N. C.
Numa Gray Daub,	Tobaccoville,	Forsyth,	N. C.
Ezra Lewis Furches,	Mocksville,	Davie,	N. C.
George Henderson Glover,	Salisbury,	Rowan,	N. C.
Frank Grady Hall,	Barber,	Rowan,	N. C.
Thomas Clinton Hamilton,	Beaver Creek,	Ashe,	N. C.
Benjamin Harrison Hardin,	Beaver Creek,	Ashe,	N. C.
Norman James Herring,	Garland,	Sampson,	N. C.
Cicero Ulysses Hinshaw,	Greensboro, R. 6,	Guilford,	N. C.
Sylvester Cass Hopkins,	Spring Hope,	Nash,	N. C.
William Franklin Hutchison,	Exway,	Richmond,	N. C.
Leslie Thomas Jeffress,	Norlina,	Warren,	N. C.
Claud Vestal Jones,	Trinity,	Randolph,	N. C.
Roger Vandeventer Knight,	Corapeake,	Gates,	N. C.
Arthur Edgar Lentz,	Statesville,	Iredell,	N. C.
Henry Alvin Litchfield, Jr.,	Creswell,	Washington,	N. C.
Neill Cameron McFadyen,	Raeford,	Cumberland,	N. C.
Percy James Lee Medlin,	Cary,	Wake,	N. C.
Ennis Marion Midyette,	Bath,	Beaufort,	N. C.
Elmott Dale Moore,	Jackson,	Northampton,	N. C.
William Hevy Rouse,	Middlesex,	Nash,	N. C.
Sanky Morris,	Apex,	Wake,	N. C.
Orville Lindsay Ripple,	Lexington,	Davidson,	N. C.
Zeb Roscoe Saine,	Lincolnton,	Lincoln,	N. C.
Robert Newton Shearon,	Wake Forest,	Wake,	N. C.
Gwynn Darby Smith,	Fort Mill,	Mecklenburg,	N. C.

Name.	*Address.*	*County.*	*State.*
William Alfred Swain,	Plymouth,	Washington,	N. C.
Hugh Carter Taylor,	Charleston,	Charleston,	S. C.
Luther Neal Untz,	Concord,	Cabarrus,	N. C.
James Brackin Watlington,	Ruffin,	Rockingham,	N. C.
George Sherwood Williams,	Salisbury,	Rowan,	N. C.
Thomas Jacob Willis,	Lawndale,	Cleveland,	N. C.
Archie Columbat Yow,	Greensboro,	Guilford,	N. C.

NIGHT SCHOOL STUDENTS.

Textile.

Joseph N. Allen,	Raleigh.
John B. Baker,	Raleigh.
Edward L. Brown,	Raleigh.
Fred L. Brown,	Raleigh.
Neal T. Brown,	Raleigh.
Albert Campbell,	Raleigh.
W. B. Colmans,	Raleigh.
John M. Cox,	Raleigh.
Arthur J. Davis,	Raleigh.
Arthur S. Davis,	Raleigh.
Albert V. Dixon,	Raleigh.
Charles E. Fitzgerald,	Raleigh.
Arthur L. Foster,	Raleigh.
John F. Gray,	Raleigh.
Henry Harrison,	Raleigh.
Walter A. Harvey,	Raleigh.
Frederick S. Hasty,	Raleigh.
Leonard A. King,	Raleigh.
Fred McDay,	Raleigh.
Maurice F. McLean,	Raleigh.
William H. McLean,	Raleigh.
Cleveland A. Mangum,	Raleigh.
Will Moody,	Raleigh.
Hal Moore,	Raleigh.
Virgil P. Stone,	Raleigh.
Taylor Strickland,	Raleigh.
Albert A. West,	Raleigh.
Elbert White,	Raleigh.
William M. Woodlief,	Raleigh.

MAY SCHOOL FOR TEACHERS.

Name.	*Address.*
Daniel Hubert Boney,	Teachey's.
Beulah Bragg,	Durham.
Annie Laurie Bryan,	Moncure.
John Thomas Colwell,	Watha.
Gertrude Agnes Walker Cree,	Embro.
Laura Faucette,	Lenoir.
Jesse Walton Fussell,	Teachey's.
Gertrude Harts,	Parkton.
Kittie McNeill John,	Lumber Bridge.
Alice McDanell King,	Kinston.
Nan Elizabeth Lansdell,	Semora.
Lena Bridges Luther,	Fayetteville.
Timothy Raymond McMillan,	Teachey's.
Annie Isabel Moseley,	Wentworth.
Elsie Pherabe Penny,	Garner.
Orin G. Reynolds,	Rockingham.
Minor Richardson,	Neuse.
Mary Rowe,	Conover.
Philip Ervin Shaw,	Teachey's.
Virginia Shivers,	Rocky Mount.
Mabel Viola Smith,	Willow Springs.
Arthur Lee Teachey,	Teachey's.
James Daniel Teachy,	Teachey's.
Kate Dibrell Walker,	Raleigh.
Callie Webster,	Siler City.
Mary Clemmer Williams,	Raleigh, R. 3.
Chappel Wilson,	Howellsville.

Nineteenth Annual Commencement.

May 27, 1909.

DEGREES CONFERRED.

BACHELORS OF SCIENCE.

In Agriculture.

John Allen Arey,
William Hunt Eaton,
Ralph Ringgold Faison,
Frank Lindsay Foard,
Andrew Hartsfield Green,
Bascombe Britt Higgins,
Wayne Arington Hornaday,
James Edward Latham,
Ralph Long,
Ralph Cecil Mason,
Arthur Ballard Massey,
Robert Richard Reinhardt.

In Chemistry.

William Roy Hampton,
Daniel Harvey Hill, Jr.,
Francis Webber Sherwood,
James Edwin Toomer.

BACHELORS OF ENGINEERING.

In Civil Engineering.

William Herbert Doughty Banck,
Cecil DeWitt Brothers,
Thorne McKenzie Clark,
Fred Atha Duke,
Lewis Price Gattis,
Albert Sidney Goss,
Charlie Pool Gray,
Thomas Frederick Haywood,
William Fladger R. Johnson,
Frederick John Jones,
Samuel Macon Mallison,
Benjamin Franklin Montague,
Julius Monroe Parker,
Peter Penick Pierce,
Alfred Pratte Riggs,
James Olin Sadler,
Robert Arnold Shope,
William Neville Sloan,
Hugh Stewart Steele,
Samuel Fatio Stephens,
Henry Newbold Sumner,
Joseph Slaughter Whitehurst,
Paul Adams Witherspoon.

In Electrical Engineering.

Joseph Frank Davidson,
Gordon Harris,
Samuel Huxley McNeely,
Samuel Loftin Oliver,
John Gilbert Paschal,
Joseph Henry Robertson,
Malvern Hill Terrell,
John Spicer Wilson.

In Mechanical Engineering.

Walter Miller Cowles,
William Alexander Faison,
John William Harrelson,
Leonard Henderson,
John William Ivey,
William Roydan Marshall,
William Flaud Morris,
Paul Miller Pitts,
John Moir Price,
Claude Stratton Tate,
Robert Job Wyatt.

In Textile Industry.

William Samuel Dean,
Carlton O'Neal Dougherty,
Roscoe Loomis Fox,
Walker Morehead Millner,
George Gray Simpson.

Wiley Theodore Clay, Course in Mechanical Engineering, Mechanical Engineer.

Lillian Lee Vaughan, Course in Mechanical Engineering, Mechanical Engineer.

Jarvis Benjamin Harding, Course in Civil Engineering, Civil Engineer.

James Kemp Plummer, Jr., Course in Chemistry, Master of Science.

Jesse Page Spoon, Course in Agriculture, Master of Science.

Honors.

HONORS IN SCHOLARSHIP.

For Four Years.

J. W. Harrelson.

For 1908-09—Senior Class.

J. A. Arey,
W. S. Dean,
W. H. Eaton,
B. B. Higgins,
W. A. Hornaday,
J. W. Harrelson,
J. W. Ivey,
R. C. Mason,
W. M. Millner,
W. F. Morris,
J. M. Parker,
P. P. Pierce,
J. M. Price,
A. P. Riggs,
F. W. Sherwood,
G. G. Simpson,
W. N. Sloan,
H. S. Steele,
S. F. Stephens,
H. N. Sumner,
J. S. Wilson.

Junior Class.

L. H. Kirby,
U. C. Loftin,
E. B. Moore,
W. M. Neale,
E. H. Smith,
C. B. Stainback,
T. B. Stansel,
T. B. Summerlin,
C. E. Walton.

Sophomore Class.

C. E. Bell,
J. H. Brown,
K. Bryan,
R. W. Graeber,
F. T. Peden,
J. P. Quinerly,
G. W. Ross,
T. W. Thorne,
W. P. Thurston.

Freshman Class.

J. G. Kellogg,
J. E. McGee.

Honors for Punctuality.

J. P. Betts,
W. F. Eller,
J. M. Gray,
R. M. Hardison,
Frank Hawks,
D. R. Hinkle,
S. B. Howard,
R. W. Howell,
J. W. Ivey,
C. W. Lee,
B. A. Lide,
L. D. Moody,
J .M. Parker,
W. C. Pennington,
B. M. Potter,
J. M. Price,
A. P. Riggs,
E. L. Sherlock,
T. B. Stansel,
H. S. Steele,
H. N. Sumner,
W. T. Shull,
H. B. Tice,
H. M. Walton,
H. P. Whitted,
M. R. Yarbrough.

Medals Awarded.

National Association of Cotton Manufacturers....George Gray Simpson.

Register of Alumni.

CLASS OF 1893.

Name.	*Degree.*	*Address.*
Robert Wilson Allen, Superintendent of School.	B. E.,	Sanford, N. C.
Samuel Erson Asbury, M. S. 1896. Assistant State Chemist.	B. S.,	College Station, Tex.
Henry Emil Bonitz, Architect.	B E.,	Wilmington, N. C.
Frank Fuller Floyd, Vice-President and Sales Manager Jellico Coal Mining Co.	B. E.,	Knoxville, Tenn.
Charles Duffy Francks, Teacher and Farmer.	B. E.,	Richlands, N. C.
Edward Moore Gibbon,† William W. Lyon Engineering Co.	B. E.,	Jacksonville, Fla.
George Pender Gray,† Commercial Traveler Read Phosphate Co., of Nashville, Tenn.	B. S.,	Tarboro, N. C.
Charles Bolling Holladay,	B. E.,	Wilmington, Del.
William McNeil Lytch, Operator Machine Shops.	B. E.,	Laurinburg, N. C.
James William McKoy, Civil Engineer and Merchant.	B. E.,	Black Mountain, N. C.
Walter Jerome Mathews, Machine Broker.	B. E.,	Goldsboro, N. C.
Frank Theophilus Meacham, M. S. 1894. Superintendent State Test Farm.	B. S.,	Statesville, N. C.
Carl DeWitt Sellars, Cone Export and Commission Co.	B. E.,	Greensboro, N. C.
Charles Edgar Seymour,*	B. S.,	Raleigh, N. C.
Buxton Williams Thorne,*	B. E.,	Holly Springs, Miss.
William Harrison Turner, Wholesale Dealer in Mill Feed, Hay and Grain.	B. E.,	Winston-Salem, N. C.
Charles Burgess Williams, M. S. 1896. Director of N. C. Experiment Station.	B. S.,	West Raleigh, N. C.
Louis Thomas Yarbrough, Registry Clerk Raleigh Post Office.	B. E.,	Raleigh, N. C.
Samuel Marvin Young, Traveling Salesman Supplee Hardware Co., Philadelphia, Pa.	B. E.,	Raleigh, N. C.

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*Deceased.

†Not heard from this year.

It is the purpose of the College to keep in touch with the Alumni. Please notify the Registrar promptly of any change of address.

CLASS OF 1894.

Name.	*Degree.*	*Address.*
CHARLES EDWARD CORPENING, Farmer and Dealer in Lumber.	B. E.,	Lenoir, N. C., R.F.D. 3.
DAVID COX, Civil Engineer and Manager Yeopim Lumber Co.	B. E.,	Hertford, N. C.
ROBERT DONNELL PATTERSON, M. S. 1898. Cashier First State Bank.	B. S.,	Chase City, Va.
CHARLES PEARSON, Superintendent of Construction, Gude & Co. Home Address, Raleigh, N. C.	B. E.,	Atlanta, Ga.
ZEBBIE GEORGE ROGERS, Resident Engineer Baltimore and Ohio Railroad.	B. E.,	Washington, D. C.
JOHN HYER SAUNDERS, Locomotive Engineer Atlantic Coast Line Railway.	B. E.,	Rocky Mount, N. C.
BENJAMIN FRANKLIN WALTON, Farmer.	B. S.,	Raleigh, N. C., R. F. D. 1.
JOHN MCCAMY WILSON, Mechanical and Electrical Engineer Inman Cotton Mills.	B. E.,	Spartanburg, S. C.

CLASS OF 1895.

Name.	*Degree.*	*Address.*
THOMAS MARTIN ASHE,*	B. E.,	Raleigh, N. C.
JAMES ADRIAN BIZZELL, M. S. 1900. Ph.D. Cornell University. Assistant Professor Soil Technology N. Y. State College of Agriculture.	B. S.,	Ithaca, N. Y.
JOHN ISHAM BLOUNT, C. E. 1897. M. E. Cornell University. Proprietor J. I. Blount & Co., Sales Agents for Machinery Builders.	B. E.,	Birmingham, Ala.
JAMES WASHINGTON BRAWLEY, Superintendent of Agents Southern Life and Trust Co.	B. S.,	Greensboro, N. C.
WILLIAM AUSTIN BULLOCK, Superintendent of Tobacco Plantation A. Cohn & Co.	B. S.,	Amsterdam, Ga.
DAVID CLARK, M. E. 1896. C. E. 1897. M. E. Cornell University 1898. Editor American Textile Manufacturer.	B. E.,	Charlotte, N. C.
GEORGE WASHINGTON CORBETT, JR., Corbett & Corbett, Manufacturers of Lumber.	B. E.,	Currie, N. C., R. F. D., 2.
EDWIN SPEIGHT DARDEN, Warehouseman and Farmer.	B. S.,	Wilson, N. C.
WILLIAM KEARNEY DAVIS, JR., Superintendent Marion Manufacturing Co.	B. E.,	Marion, S. C.
JOSEPH CHARLES DEY, Produce Broker.	B. S.,	Norfolk, Va.
LEE BORDEN ENNETT, Farmer and County Superintendent of Schools.	B. S.,	Cedar Point, N. C.

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*Deceased.

Name.	Degree.	Address.	
Isaac Henry Faust,	B. E.,	Ramseur, N. C.	Contractor and Farmer.
Charles Willis Gold,	B. S.,	Raleigh, N. C.	Secretary and Superintendent of Agencies Jefferson Standard Life Insurance Co.
William Henry Harris,	B. E.,	Pawtaucket, R. I.	M. E. 1896. Treasurer and Agent Slater Manufacturing Co.
Christopher Miller Hughes,	B. E.,	Fayetteville, N. C.	B. S. 1899. Vice-President W. J. McDiarmid Co., Wholesale Lumber.
Malcolm Beall Hunter,	B. E.,	Charlotte, N. C.	President Acme Plumbing and Electric Co.
Samuel Christopher McKeown,	B. E.,	Sumter, S. C.	Sumter Telephone Manufacturing Co.
Mann Cabe Patterson,	B. E.,	Durham, N. C.	Patterson & Roach Manufacturing Co.
Abram Hinman Prince,	B. S.,	San Augustine, Tex.	Tobacco Farmer, also Special Agent U. S. Department of Agriculture.
Charles Marcellus Pritchett,	B. E.,	Manila, P. I.	C. E. 1896. Chief Division Engineer Philippine Government.
Victor Vashti Privott,†	B. E.,	Suffolk, Va.	Merchant.
Howard Wiswall, Jr.,†	B. E.,	Charleston, S. C.	Engineer and Timberman Midland Timber Co.
Charles Garrett Yarbrough,	B. E.,	Chicago, Ill.	Construction Western Electric and Manufacturing Co.

CLASS OF 1896.

Daniel Allen,	B. S.,	Raleigh, N. C.	Traveling Salesman.
George Stronach Fraps,	B. S.,	College Station, Tex.	Ph.D. Johns Hopkins University. State Chemist and Chemist Texas Experiment Station. Chemist Feed Control.
Marion Jackson Green,	B. S.,	Charlotte, N. C.	Pattern Maker Cole Manufacturing Co.
John Howard,	B. S.,	Middleboro, Ky.	Civil and Mining Engineer.
William Colbert Jackson,	B. S.,	Middlesex, N. C.	Merchant and Farmer.
Robert Graham Mewborne,	B. S.,	Louisville, Ky.	Chemist Kentucky Tobacco Product Co.
Levi Romulus Whitted,	B. S.,	St. Louis, Mo.	C. E. 1897. Superintendent of Construction U. S. P. Buildings.
Henry Lloyd Williams,†	B. S.,	Cofield, N. C.	Manager of Sawmill, Cofield Manufacturing Co.

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†Not heard from this year.

CLASS OF 1897.

Name. *Degree.* *Address.*

Joseph Samuel Buffaloe, B. S., Garner, N. C.
M. D. Baltimore Medical College. Physician.

John William Carroll, B. S., Wallace, N. C.
M. D. University of Maryland 1903. Physician.

Charles Edward Clark, B. S., Charlotte, N. C.
Superintendent of Demonstration Work in Mecklenburg County, U. S. Department of Agriculture.

Wm. Alexander Graham Clark, B. S., Raleigh, N. C.
M. E. 1899. M. E. Cornell University. Special Agent Department of Commerce and Labor, U. S. A. Now in South America.

Nicholas Louis Gibbon, B. S., Providence, R. I.
Cotton Mill Engineer and Architect, C. R. Makepeace & Co.

Ceburn Dodd Harris, B. S., Louisville, Ky.
A. M. Cornell University. Strater Bros. Tobacco Co.

Jere Eustis Highsmith,† B. S., Parkersburg, N. C.
Farmer.

Clyde Bennett Kendall, B. S., Washington, D. C.
Assistant Topographer U. S. Geological Survey.

Sydney Gustavus Kennedy, B. S., Sanford, Fla.
Round House Foreman Atlantic Coast Line Railroad Co.

Joseph Lawrence Knight,† B. S., Dewey, Fla.
Pas Manufacturing Co., Naval Stores.

Walter Jones McLendon, Jr., B. S., Marshall, N. C.
President and General Manager Capitola Manufacturing Co.

Repton Hall Merritt, B. S., Raleigh, N. C.
Secretary and Treasurer Powell & Powell (Incorporated).

Albert Hicks Oliver, B. S., Mount Olive, N. C.
Farmer.

Hugh Williams Primrose,* B. S., Raleigh, N. C.
M. S. 1900.

Willis Hunter Sanders, B. S., Roanoke Rapids, N. C.
Superintendent of Power Plant Roanoke Navigation and Water Power Co.

Thomas Jehu Smithwick, Mt. Airy, N. C.
Chief Engineer and Electrician N. C. Granite Corporation.

Jordan Lea Watson, B. S., Atlanta, Ga.
District Manager Allis-Chalmers Co.

Bradley Jewett Wootten,* B. S., Wilmington, N. C.

CLASS OF 1898.

Dorsey Frost Asbury,† B. S., Washington, D. C.
Draftsman Naval Gun Factory.

Sidney Hamilton Beck,† B. S., Washington, D. C.
Marine Engine and Boiler Draftsman Navy Department.

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*Deceased.
†Not heard from this year.

Name.	*Degree.*	*Address.*
Anson Elikem Cohoon,	B. S.,	Eugene, Ore.
Forest Supervisor U. S. Department of Agriculture.		
Hugh McCullom Curran,	B. S.,	Manila, P. I.
U. S. Forest Service.		
Benjamin Carey Fennell,	B. S.,	Atlanta, Ga.
M. E. 1900. Manager Southern Office American Blower Co.		
Alpheus Rountree Kennedy,†	B. S.,	Quincy, Mass.
Draftsman Fore River Shipbuilding Co.		
Frederick Creecy Lamb,†	B. S.,	El Paso, Tex.
City Chemist and Bacteriologist. Home address, Elizabeth City, N. C.		
Edwin Bentley Owen,	B. S.,	West Raleigh, N. C.
Registrar N. C. College of Agriculture and Mechanic Arts.		
B. Moore Parker,	B. S.,	West Raleigh, N. C.
Assistant Professor of Textile Industry North Carolina College of Agriculture and Mechanic Arts.		
Numa Reid Stansel,	B. S.,	Schenectady, N. Y.
Engineer General Electric Co.		
Teisaku Sugishita,†	B. S.,	Kokufu, Japan.
Civil Engineer.		
George Frederick Syme,	B. S.,	Raleigh, N. C.
C. E. 1907. Assistant Engineer Seaboard Air Line Railway.		

CLASS OF 1899.

Wm. Davidson Alexander, Jr.,	B. S.,	Charlotte, N. C.
Engineer Charlotte Contract Co.		
Ira Wilson Barber,	B. S.,	Mt. Airy, N. C.
Superintendent Light and Power Plant and Waterworks.		
John Henderson Birdsong,	B. S.,	Chicago, Ill.
Chemist The National Malleable Castings Co.		
Francis Marion Foy,*	B. S.,	Scott's Hill, N. C.
Albert Sidney Lyon,	B. S.,	Rocky Mount, N. C.
Superintendent Public Works City of Rocky Mount.		
Carroll Lamb Mann,	B. S.,	C. E., West Raleigh, N. C.
Civil Engineer and Assistant Professor of Civil Engineering N. C. College of Agriculture and Mechanic Arts.		
O'Kelly W. Myers,	B. S.,	Boston, Mass.
Civil Engineer U. S. Engineering Department.		
Eugene Leroy Parker,	B. S.,	Mt. Pleasant, Tenn.
Manager E. L. Parker & Co. Laboratory.		
Eugene Gray Person,†	B. S.,	Macon, Ga.
Train Dispatcher Central of Georgia Railway.		
Frederick Erastus Sloan,	B. S.,	Raleigh, N. C.
General Agent The Security Life and Annuity Co. of Greensboro, N. C.		

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*Deceased.
†Not heard from this year.

Name.	*Degree.*	*Address.*
Andrew Thomas Smith, Draftsman in charge New York Shipbuilding Co.	B. S.,	Camden, N. J.
Alexis Preston Steele, Mechanical Engineer J. C. Steele & Sons.	B. S.,	Statesville, N. C.
William Anderson Syme,*	B. S., M. S.,	Raleigh, N. C.
Hugh Ware,† Chemist Decatur Car Wheel and Manufacturing Co.	B. S.,	Birmingham, Ala.
Claude B. Williams, Physician.	B. S.,	Elizabeth City, N. C.

CLASS OF 1900.

Kemp Alexander, Superintendent Marion Knitting Mill.	B. E.,	Marion, N. C.
Leslie Lyle Allen,† Cotton Broker Firm of Cooke & Allen.	B. E.,	Spartanburg, S. C.
Robert Linn Bernhardt, Salisbury Hardware and Furniture Co.	B. S.,	Salisbury, N. C.
Leslie Graham Berry, Contracting Engineer Des Moines Bridge and Iron Works.	B. E.,	Des Moines, Ia.
James Harry Bunn, Assistant Secretary Henderson Cotton Mills.	B. E.,	Henderson, N. C.
Samuel Merrill Hanff, Episcopal Minister.	B. S.,	Duke, N. C.
George Roland Harrell, With the Graselli Chemical Co.	B. S.,	Grasselli, N. J.
Henry Allen Huggins, Bookkeeper George W. Huggins, Jeweler.	B. S.,	Wilmington, N. C.
Garland Jones, Jr.,† Chemist Armour & Co.	B. S.,	Fort Worth, Tex.
Louis Henry Mann, D. D. S. University of Maryland 1904. Dentist.	B. E.,	Washington, N. C.
Robert Hall Morrison, President Mariposa Cotton Mills.	B. E.,	Stanley, N. C.
William Montgomery Person, Maryland Steel Company.	B. E.,	Sparrow's Pt., Balto., Md.
Junius Edward Porter,† Railroad Contractor with Wade, Morrison & Co.	B. E.,	Weldon, N. C.
Roger Francis Richardson, Construction Engineer Tennessee Coal, Iron and Railroad Co.	B. E.,	Ensley, Ala.
William Edwin Rose,† Newport News Shipbuilding and Dry Dock Co.	B. E.,	Newport News, Va.
Floyd De Ross,† Salesman Fostoria Incandescent Lamp Co.	B. E.,	Charlotte, N. C.

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†Not heard from this year.

Name.	*Degree.*	*Address.*
Ira Obed Schaub,	B. S.,	West Raleigh, N. C.
Professor of Agricultural Extension N. C. College of Agriculture and Mechanic Arts.		
John Wade Shore,	B. S.,	Boonville, N. C.
Farmer and Teacher.		
William Turner Smith,	B. E.,	Dublin, Ga.
Contractor Crofts & Smith.		
Solomon Alexander Vest,	B. S.,	Mt. Pleasant, Tenn.
Chief Chemist F. G. Smith Laboratory and Chemist Rockdale Iron Co.		
Roscoe Marvin Wagstaff,	B. E.,	Norfolk, Va.
Engineering Draftsman U. S. Navy Department.		
Gaither Hall Whiting,*	B. S.,	Richmond, Va.

CLASS OF 1901.

Fletcher Hess Barnhardt,	B. E.,	Montreal, Canada.
Employ Board of Engineers Quebec Bridge.		
William Osborne Bennett,	B. E.,	Wadesboro, N. C.
Manager South Atlantic Oil Co.		
Fred Wilhelm Bonitz,	B. E.,	Wilmington, N. C.
Attorney at Law.		
Zolly Mosby Bowden,	B. E.,	Mulberry, Fla.
Electrician Florida Mining Co.		
Bedford Jethro Brown,		Charlotte, N. C.
In Charge of Meter Department Southern Power Co.		
Paul Collins,	B. S.,	College Park, Md.
Assistant Chemist Agricultural Experiment Station.		
William Pescud Craige,†	B. S.,	New Orleans, La.
With Peter F. Pescud, Underwriter.		
William Lois Craven,	B. E.,	York, Pa.
Draftsman York Bridge Co.		
Felix Gray Crutchfield,	B. E.,	Winston-Salem, N. C.
Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.		
George Maslin Davis,	B. E.,	Winston-Salem, N. C.
Draftsman Chief Engineer's Office Southbound Railway Co.		
William Dollison Faucette,	B. E.,	Portsmouth, Va.
Assistant to the President Seaboard Air Line Railway.		
Benjamin Oliver Hood,	B. E.,	New York, N. Y.
With F. A. Burdett, Consulting Engineer.		
Martin Kellogg,	B. Agr.,	Gatesville, N. C.
Register of Deeds of Gates County.		
Jesse Julian Liles,	B. E.,	Pittsburg, Pa.
Commercial Department General Electric Co.		
Lewis Omer Lougee,	B. E.,	Pittsburg, Pa.
Of the Firm of George S. Baton & Co., Civil and Mining Engineers.		

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*Deceased.

†Not heard from this year.

Name.	*Degree.*	*Address.*
Charles Harden McQueen,	B. E.,	Richmond, Va. Civil Engineer Atlantic Bitulithic Co.
William Franklin Pate,	B. S.,	Wooster, Ohio. Assistant Chemist Agricultural Experiment Station.
Edward Oscar Smith,	B. E.,	Newport News, Va. Special Draftsman Newport News Shipbuilding and Dry Dock Co.
Walter Stephen Sturgill,	B. E.,	Vancouver Barracks, Wash. First Lieutenant Second Field Artillery, U. S. Army.
Beverley Nathan Sullivan,	B. S.,	Winston-Salem, N. C. Superintendent Winston-Salem Light and Fuel Co.
Charles Augustus Watson,*	B. S.,	Raleigh, N. C.
Benjamin Vaden Wright,	B. E.,	Laurel, Miss. Bridge Engineer N. O. M., and C. R. R. Co.

CLASS OF 1902.

William David Boseman,	B. E.,	Rocky Mount, N. C. Farmer.
Junius Sidney Cates,	B. S.,	Washington, D. C., M. Agr. 1904. Assistant Agriculturist. B. P. I., U. S. Department of Agriculture.
Bobert Baxter Cochran,†	B. E.,	Urbana, Ohio. Electrical Engineer. Home address, Statesville, N. C.
James Lumsden Ferebee,†	B. E.,	Wilmington, Del. Resident Engineer Water Department City of Wilmington.
Robert Irving Howard,	B. E.,	West Raleigh, N. C. Student in Civil Engineering N. C. College of Agriculture and Mechanic Arts.
John Luther McKimmon,	B. Agr.,	Laurinburg, N. C. Farmer.
Laurie Moseley,	B. E.,	Greensboro, N. C. Southern Agent Owego Bridge Co.: Also President Carolina Concrete Co.
Vassar Young Moss,	B. E.,	Cannonsburg, Pa. Draftsman Fort Pitt Bridge Works.
Charles Arthur Nichols,	B. E.,	Muscogee, Indian Ter. Secretary and Treasurer Third Street Grocery Co.
James Lafayette Parker,	B. E.,	New York, N. Y. Assistant Engineer H. C. Keith, Consulting Engineer.
William Benedict Reinhardt,	B. E.,	Dawson, Y. T. Electrician Dawson Electric Light and Power Co., Ltd.
Russell Elstner Snowden,	B. E.,	Norfolk, Va. Civil Engineer S. A. L. Railway.
Joseph Platt Turner,	B. E.,	Spray, N. C. Vice-President and Superintendent Lily Mills.
Cleveland Douglas Welsh,	B. E.,	Mayesworth, N. C. Mayes Manufacturing Co.

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†Not heard from this year.

CLASS OF 1903.

Name.	*Degree.*	*Address.*
William Norton Bogart,†	B. E.,	Washington, N. C.
Leslie Norwood Boney,	B. E.,	Florence, S. C.
Architect.		
John Samuel P. Carpenter,	B. E.,	Cherryville, N. C.
Superintendent and Director Melville Manufacturing Co.		
Walter Clark, Jr.,	B. E.,	Raleigh, N. C.
Lawyer.		
John Elliot Coit,	B. Agr.,	Whittier, Cal.
Ph. D. Cornell University. Assistant Professor of Pathology University of California.		
Summey Crouse Cornwell,	B. E.,	Atlanta, Ga.
Civil Engineer Solomon-Norcross Co., Atlanta, Ga.		
Charles Lester Creech,	B. S.,	New York, N. Y.
Manager New York Office of John W. Fries.		
Eugene English Culbreth,	B. E.,	Raleigh, N. C.
Bookkeeper Commercial National Bank.		
Walter Lee Darden,	B. E.,	Portsmouth, Va.
Chief Draftsman Seaboard Air Line Railway, Portsmouth, Va.		
Junius Franklin Diggs,	B. S.,	Rockingham, N. C., R. 1.
Farmer and Merchant.		
Theophilus Thomas Ellis,	B. E.,	Henderson, N. C., R. 4.
Farmer.		
John Daniel Ferguson,	B. E.,	Bladenboro, N. C.
Civil Engineer and Farmer.		
Hugh Pierce Foster,	B. E.,	Mt. Pleasant, Ga.
Associated with Southern Manufacturing Co., Pittsburg, Pa.		
Oliver Max Gardner,	B. S.,	Shelby, N. C.
Lawyer.		
Lamar Carson Gidney,	B. E.,	Shelby, N. C.
Shelby Plumbing and Electric Co.		
John Howard Glenn,*	B. E.,	Crowder's Creek, N. C.
Emil Gunter,	B. E.,	Chihuahua, Mexico
Electrical Engineer, American Securities Co.		
Eugene Colistus Johnson,	B. E.,	Ingold, N. C.
Sawmilling.		
James Matthew Kennedy,	B. E.,	Raleigh, N. C.
Architect.		
Bennett Land, Jr.,	B. E.,	Jacksonville, Fla.
Division Engineer Seaboard Air Line Railway.		
John Thomas Land,†	B. E.,	Norfolk, Va.
Civil Engineer with E. C. Foreman and J. T. Land.		
Edmond Shaw Lytch,	B. E.,	Laurinburg, N. C.
Laurinburg Machine Co.		

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*Deceased.

†Not heard from this year.

Name.	*Degree.*	*Address.*
JESSE JOHN MORRIS,†	B. E.,	Norfolk, Va.
Civil Engineer Norfolk and Southern Railroad.		
DAVID STARR OWEN,	B. E.,	Fayetteville, N. C.
Superintendent Standard Turpentine Co.		
JOHN HARVEY PARKER,	B. E.,	New Bern, N. C.
Pepsi-Cola Co.		
JOEL POWERS,	B. E.,	Goldsboro, N. C.
Draftsman Dewey Bros.		
EDWARD HAYS RICKS,	B. E.,	Rocky Mount, N. C.
Salesman H. E. Brewer & Co.		
GASTON WILDER ROGERS,	B. E.,	Birmingham, Ala.
C. E. 1905. Student of Medicine.		
CHARLES BURDETTE ROSS,	B. E.,	Charlotte, N. C.
J. D. Ross & Son.		
JOHN HOUSTON SHUFORD,	B. S.,	Charlotte, N. C.
Technical Representative and Salesman Berlin Aniline Works.		
EDWARD ROE STAMPS,	B. E.,	Macon, Ga.
Superintendent F. S. Royster Guano Co.		
GEORGE YATES STRADLEY,	B. E.,	Steelton, Pa.
Pennsylvania Steel Co.		
CHARLES EDWARD TROTTER,*	B. S.,	Franklin, N. C.
JONATHAN WINBORNE WHITE,†	B. S.,	State College, Pa.
Assistant Chemist Agricultural Experiment Station.		
EDWIN SEYMOUR WHITING,*	B. E.,	Hamlet, N. C.

CLASS OF 1904.

NELSON ADAMS,	B. E.,	McColl, S. C.
Farmer.		
HAYWOOD LEWIS ALDERMAN,	B. E.,	Greensboro, N. C.
EUGENE CLEVELAND BAGWELL,	B. E.,	Plant City, Fla.
Resident Engineer S. A. L. Railway.		
EDWARD PAR BAILEY,	B. E.,	Wilmington, N. C.
President Wilmington Iron Works.		
JAMES CLAUDIUS BARBER,	B. E.,	Barber, N. C.
Farmer.		
WILLIAM WALTER BARBER,	B. E.,	Barber, N. C.
Farmer.		
WILLIAM ALEXANDER BARRETT,	B. E.,	Missoula, Mont.
Electrician Missoula Light and Power Co.		
TIMOTHY ELDRIDGE,	B. E.,	Mt. Olive, N. C.
Superintendent Electric Light Plant.		

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*Deceased.

†Not heard from this year.

Name. *Degree.* *Address.*

James William Farrior,† B. E., Schenectady, N. Y.
General Electric Company, Testing Department.

William Walter Finley, B. S., North Wilkesboro, N. C.
Proprietor Fair View Dairy and Stock Farm.

George Washington Foushee, B. E., Greensboro, N. C.
Bookkeeper Dicks Laundry Company.

Edgar William Gaither, B. S., Wooster, Ohio.
Assistant Chemist Ohio Agricultural Experiment Station.

Paul Stirewalt Grierson, B. E., Newport News, Va.
Electrician in charge Charles Cory & Son, New York.

Joseph Perrin Gulley, Jr., B. E., Raleigh, N. C.
Traveling Salesman Giese Manufacturing Co.

Jarvis Benjamin Harding, B. E., Mexico, D. F.
Textile 1904. Civil 1905.
National Railways, J. M. Reid, Chief Engineer.

George Herbert Hodges, B. E., Scottdale, Pa.
Mechanical Draftsman H. C. Frick Coke Co.

Jesse McRae Howard, B. E., Concord, N. C.
Overseer of Dyeing Gibson Manufacturing Co.

Branton Faison Huggins, B. E., Macon, Ga.
Central Georgia Land and Lumber Co.

Hill McIver Hunter, B. E., Greensboro, N. C.
Assistant Purchasing Agent Proximity Manufacturing Co. and White Oak Mills.

William Kerr, B. S., Tishomingo, Okla.
Agriculturist Murray State School of Agriculture.

Ernest Edwin Lincoln, B. E., Phoenixville, Pa.
Draftsman Phœnix Bridge Co.

John Fairly McIntyre,† B. E., Laurinburg, N. C.
Farmer.

James McKimmon, B. E., Raleigh, N. C.
General Bookkeeper Raleigh Banking and Trust Co.

Joseph Alfred Miller, Jr., B. E., Brevard, N. C.
Vice-President and Manager Miller Supply Co.

William Field Morson, B. E., Dillon, S. C.
Assistant Engineer N. & S. C. Railroad.

Leon Andrew Neal, B. E., Bristol, Tenn.
Assistant Engineer Virginia and Southwestern Railway Co.

William Joel Patton,† B. E., Brevard, N. C.
Lumber Business.

Frederick Colwell Phelps, B. E., Manila, P. I.
Fort Wm. McKinley, 12th Infantry.

William Walter Rankin, B. E., Fredericksburg, Va.
Professor of Mathematics, Fredericksburg College.

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†Not heard from this year.

Name.	*Degree.*	*Address.*
RISDEN PATTERSON REECE,	B. E.,	Winston-Salem, N. C.
Mechanical Designer Salem Iron Works.		
WILLIAM RICHARDSON, JR.,	B. E.,	Scottdale, Pa.
Engineer H. C. Frick Coke Co.		
JAMES CLARENCE TEMPLE,	B. S.,	Experiment, Ga.
M. S. 1903. Bacteriologist Georgia Experiment Station.		
JOSEPH KENDALL WAITT,	B. E.,	Mulberry, Fla.
Chief Engineer Prairie Pebble Phosphate Co.		
MARION EMERSON WEEKS,	B. E.,	Washington, D. C.,
Draftsman Bureau of Equipment.		
ALBERT CLINTON WHARTON, JR.,	B. S.,	Clemmons, N. C.
Farmer.		

CLASS OF 1905.

LEROY FRANKLIN ABERNETHY,	B. Agr.,	Hickory, N. C.
With the Abernethy Hardware Co.		
ROBERT JAMES AVERY,†	B. Agr.,	Morganton, N. C., R. 5.
OSCAR LUTHER BAGLEY,	B. S.,	Weldon, N. C.
Manager Coca-Cola Bottling Works.		
BENJAMIN ALEXANDER BROOM,	B. E.,	Chicago, Ill.
Assistant Shop Engineer, Chicago, Burlington and Quincy Railway Co.		
JOEL W. BULLOCK,	B. Agr.,	Whigham, Ga., R. 4.
Bullock Bros., Tobacco Farm.		
HENRY BROZIER CARTWRIGHT,	B. E.,	Raleigh, N. C.
Assistant Civil Engineer Seaboard Air Line Railway.		
WILLIAM MILLER CHAMBERS,	B. E.,	Maben, W. Va.
Pay-roll Clerk W. M. Ritter Lumber Co.		
WALTER GOSS FINCH,	B. E.,	Vicksburg, Miss.
Civil Engineer War Department.		
STERLING GRAYDON,	B. E.,	Charlotte, N. C.
Superintendent Atherton Mills.		
RICHARD HUGH HARPER,†	B. S.,	Green Park, N. C.
Manager Green Park Hotel.		
JERE ISAAC HERRITAGE,	B. E.,	Jacksonville, N. C.
Surveyor John L. Roper Lumber Co.		
LABAN MILES HOFFMAN, JR.,	B. E.,	Dallas, N. C.
Bank of Dallas.		
LLOYD RAINEY HUNT,	B. E.,	Lexington, N. C.
Electrician Cotton Mills.		
ARTHUR TEMPLETON KENYON,	B. E.,	Cali, Columbia.
Assistant Locating Engineer Canca Valley R. R. Co.		
WM. FRANKLIN KIRKPATRICK,	B. E.,	Kingston, R. I.
1904, B. Agr. First Assistant Division of Biology R. I. Experiment Station.		

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†Not heard from this year.

Name.	*Degree.*	*Address.*
Starr Neely Knox,	B. E.,	Charlotte, N. C.
Assistant Engineer Southern Railway.		
James Herritage Koonce,	B. E.,	Wilmington, N. C.
Assistant Civil Engineer Seaboard Air Line Railway.		
Henry Marvin Lilly,	B. E.,	Port Arthur, Tex.
Draftsman and Building Superintendent S. P. Herbert & Co.		
Lipscombe Goodwin Lykes,	B. E.,	Havana, Cuba.
With Lykes Bros., Cattle Dealers.		
George Green Lynch, Jr.,	B. E.,	Wilmington, N. C.
Draftsman Atlantic Coast Line Railway.		
Malcolm Roland McGirt,	B. Agr.,	Fayetteville, N. C.
Farmer.		
Walter Hoge McIntyre,	B. S.,	State College, Pa.
M. S. Pa. State College. Assistant in Agronomy Pennsylvania State College.		
James Oscar Morgan,	B. Agr.,	Agricultural College, Miss.
Professor of Agronomy Mississippi Agricultural College.		
Lindsay Alexander Murr,	B. E.,	Jacksonville, Fla.
Resident Engineer Seaboard Air Line Railway.		
Garland Perry Myatt,	B. S.,	Camden, N. J.
Chemist General Chemical Co.		
John Alsey Park,	B. E.,	Raleigh, N. C.
Carolina Garage and Machine Co.		
James Hicks Pierce,	B. S.,	Warsaw, N. C.
Wholesale Lumber.		
Pleasant H. Poindexter, Jr.,†	B. Agr.,	Canadian, Tex.
Manager Yard Panhandle Lumber Co.		
Edward Griffith Porter,†	B. E.,	Tampa, Fla.
Bridge Engineer Seaboard Air Line Railway.		
Robert Walter Scott, Jr.,	B. Agr.,	Rocky Mount, N. C.
Superintendent of Edgecombe Test Farm, N. C. Agricultural Department.		
Jonathan Rhodes Smith,	B. E.,	Phoenixville, Pa.
Structural Draftsman The Phœnix Bridge Co.		
John Davidson Spinks,	B. E.,	Wilmington, N. C.
Junior Engineer U. S. Engineering Office, War Department.		
Ervin Blakeney Stack,	B. E.,	Monroe, N. C.
Electrical Engineer and Contractor.		
Sylvester Murray Viele,	B. E.,	New York, N. Y.
Pennsylvania Railroad Co.		
Walter Jennings Walker,†	B. E.,	Schenectady, N. Y.
General Electric Co. Home address, Winston-Salem, N. C.		
Steven Dockery Wall,*	B. E.,	Rockingham, N. C.

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*Deceased.

†Not heard from this year.

Name. *Degree.* *Address.*

Walter Wellington Watt, Jr., B. E., Charlotte, N. C.
Draftsman-Salesman, A. H. Washburgh Co., Charlotte, N. C.

Archie Carraway Wilkinson,† B. E., Waynesville, N. C.
Locating Engineer Shoolbred & Seaver, Civil Engineers.
Home address, Charlotte, N. C.

CLASS OF 1906.

Durant Stewart Abernethy, B. E., Lynchburg, Va.
Civil Engineer Southern Railway.

George Gilderoy Allen, B. E., Concord, N. C.
Gibson Manufacturing Co.

George Page Asbury,† B. E., Jonesboro, Tenn., R. 5.
Civil Engineer C., C. & O. Railway.

James Claudius Beavers, B. Agr., Washington, D. C.
Scientific Assistant U. S. Department of Agriculture.

Needham Eric Bell, B. S., Auburn, Ala.
Farm Management Assistant Chemist Agricultural Experiment Station.

Kennet Leon Black,† B. E., Richmond, Va.
Civil Engineer with I. J. Smith Co., Contractors.

William Andrews Buys,† B. E., Belhaven, N. C.
Civil Engineer for Interstate Cooperage Co.

Mark Hopkins Chesbro, B. Agr., Claremont, Va.
Dairyman and Farmer.

Connor Calhoun Clardy, B. E., Detroit, Mich.
Inspector Construction and Tests, Detroit River Tunnel Co.

John Washington Clark, B. E., Concord, N. C.
B. E. (Tex.) 1907. Gibson Manufacturing Co.

James Duncan Clark, B. S., Tampa, Fla.
Carbonic Acid Manufacturer.

Samuel Herbert Clarke,† B. E., Statesville, N. C.
Civil Engineer.

Wiley Theodore Clay, M. E., West Raleigh, N. C.
M. E. Instructor N. C. College of Agriculture and Mechanic Arts.

Duncan Archibald Cox, B. S., Rowland, N. C.
Grocery Business.

Alexander Doane Cromartie,† B. Agr., Garland, N. C.
Farmer.

Latta Vanderion Edwards, B. E., Ithaca, N. Y.
Instructor in Railroad Engineering, Cornell University.

Weldon Thompson Ellis, B. E., West Raleigh, N. C.
M. E. 1903. Assistant Professor of Mechanical Engineering N. C. College of Agriculture and Mechanic Arts.

Albert Edward Escott, B. E., Raleigh, N. C.
Secretary Raleigh Cotton Mills and Neuse River Mills.

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†Not heard from this year.

Name.	*Degree.*	*Address.*	
William Carlyle Etheridge,	B. Agr.,	West Raleigh, N. C.	M. S. 1903. Assistant in Field Crops, North Carolina Agricultural Experiment Station.
James Beckett Ewart,	B. E.,	Hawthorne, Ill.	Western Electric Co.
Shirley Watson Foster,	B. Agr.,	Washington, D. C.	Agent and Expert Bureau of Entomology, U. S. Department of Agriculture.
Arthur Wynne Gregory,	B. S.,	Shanghai, China.	British-American Tobacco Co.
Horace Lester Hamilton,	B. E.,	Schenectady, N. Y.	Technical Writer General Electrical Co.
John Frederick Hanselman,	B. E.,	Sheffield, Ala.	Northern Alabama Reduction Co.
Clarence Wilson Hewlett,	B. E.,	Baltimore, Md.	Graduate Student and Student Assistant Johns Hopkins University.
James Allan Higgs, Jr.,†	B. E.,	Knoxville, Tenn.	Draftsman Southern Railway.
William Graham Knox,	B. E.,	New York.	Chemist Western Electric Co.
Joe Poindexter Lovill,†	B. E.,	Spokane, Wash.	Civil Engineer North Coast Lumber Co.
Thompson Mayo Lykes,	B. E.,	Tampa, Fla.	Secretary The Lykes Company.
Horace Smith McLendon,	B. Agr.,	Sanford, Fla.	Farm Manager. Holder Real Estate Co.
Raymond Maxwell,	B. E.,	Belhaven, N. C.	Chief Engineer Mattamuskeet Railroad.
Lacy Moore,	B. E.,	Lynchburg, Va.	Engineering Department Southern Railway.
Joseph Graham Morrison,	B. Agr.,	Stanley, N. C.	Merchant and Cotton Manufacturer.
Jesse Clarence Myrick,†	B. E.,	Wilmington, N. C.	Electrician Tidewater Power Co.
Charles Franklin Niven,†	B. Agr.,	Dahlonega, Ga.	Professor of Agriculture in North Georgia Agricultural College.
Lola Alexander Niven,	B. Agr.,	Rock Hill, S. C.	Horticulturist Winthrop Normal and Industrial College.
Lewis Milton Oden,	B. Agr.,	Raleigh, N. C.	Dairyman.
Thomas Jefferson Obgurn, Jr.,	B. E.,	Richmond, Va.	Everett Waddey Co.
Clyde Ester Parker,	B. S.,	Raleigh, N. C.	Firm of Parker Bros. & Co., Cotton Brokers and Merchants.

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†Not heard from this year.

Name.	*Degree.*	*Address.*
Samuel Oscar Perkins,	B. S.,	Odako, N. C.
	Farmer.	
Angelo Bettlena Piver,†	B. E.,	Phoenixville, Pa.
	Draftsman Phœnix Bridge Co.	
William Crawford Piver,	B. S.,	New York, N. Y.
	With F. C. R. Hemingway, Chemist.	
Durant Waite Robertson,	B. E.,	Washington, D. C.
	Special Agent Bureau of The Census.	
Freddie Jackson Talton,	B. Agr.,	Pikeville, N. C., R. 2.
	Farmer.	
Richard Henry Tillman,	B. E.,	Baltimore, Md.
	Industrial Engineer Consolidated Gas, Electric Light and Power Co. of Baltimore.	
William Sidney Tomlinson,	B. E.,	Portsmouth, Va.
	Civil Engineer Seaboard Air Line Railway.	
Reid Tull,	B. E.,	Woodsboro, N. C.
	Assistant Engineer Winston-Salem Southbound Railway.	
Jackson Corpening Tuttle,	B. E.,	Schenectady, N. Y.
	Designing Engineer General Electric Co.	
Robert Peele Uzzell,†	B. Agr.,	Goldsboro, N. C.
	Farming.	
Peter Valaer, Jr.,	B. S.,	Washington, D. C.
	Assistant Chemist Bureau Internal Revenue.	
Lillian Lee Vaughan,	B. E.,	New York.
	Student Columbia University.	
John Harley Williams,	B. E.,	Chicago, Ill.
	Student Institute and Training School of the Y. M. C. A.	
Lewis Taylor Winston,	B. Agr.,	Bristol, Tenn.
	Assistant Cashier Bristol Gas and Electric Co.	

CLASS OF 1907.

Herbert Scandlin Battie,	B. E.,	Steelton, Pa.
	Pennsylvania Steel Co.	
Joe Pittman Bivens,†	B. E.,	New York, N. Y.
	Meter Tester New York Edison Co.	
Carney John Bryan,	B. E.,	Panama City, Fla.
	Wholesale Dealer in Fish and Oysters.	
Lindsay Ferguson Carleton,	B. E.,	Charlotte, N. C.
	Secretary Ideal Electric Co.	
Robert Hill Carter,	B. E.,	Corozal, Canal Zone, Panama.
	United States Government.	
Jacob Tatum Eaton,	B. Agr.,	Farmington, N. C.
	Farmer and Dairyman.	
Seba Eldridge,	B. E.,	New York City, N. Y.
	Student Columbia University.	

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†Not heard from this year.

Name.	*Degree.*	*Address.*
Benjamin Bryan Everett,	B. Agr.,	Palmyra, N. C.
Farmer.		
John Lindsay Ferguson,	B. E.,	Wilkinsburg, Pa.
Testing Department Westinghouse Electric and Manufacturing Co.		
Elias Van Buren Fowler,	B. E.,	Schenectady, N. Y.
Testing Department General Electric Co.		
Clement Leinster Garner,	B. E.,	Manila, P. I.
U. S. Coast and Geodetic Survey.		
Lovic Rodgers Gilbert,	B. E.,	Rock Hill, S. C.
Purchasing Agent Hamilton-Carhart Cotton Mills.		
Roy Joseph Gill,	B. E.,	Manila, P. I.
Civil Engineer Bureau of Lands.		
Robert Strickler Graves,	B. E.,	Cincinnati, O.
Salesman General Electric Co.		
George Rom. Hardesty,	B. E.,	Goldsboro, N. C.
Chief Engineer State Hospital.		
Philip William Hardie,	B. E.,	Manila, P. I.
Civil Engineer U. S. Government.		
Jokton Lafayette Hemphill,	B. E.,	Schenectady, N. Y.
With General Electric Co.		
Lawrence James Herring,	B. Agr.,	Experiment, Ga.
Animal Pathologist and Veterinarian.		
Guy Francis Hinshaw,	B. E.,	Winston-Salem, N. C.
City Engineer.		
William Norman Holt,†	B. E.,	Smithfield, N. C.
Manager Brokerage Co., Holt & Adams.		
Albert Carl Jones,	B. Agr.,	High Point, N. C.
City Meat and Milk Inspector and Veterinarian.		
William Whitmore Jones,	B. E.,	Franklin, N. C.
Engineer Franklin Light and Power Co.		
Lafayette Franck Koonce,	B. Agr.,	Raleigh, N. C.
D. V. S. Kansas City Veterinary College. Veterinarian.		
Louis Edgar Lougee,†	B. S.,	Pittsburg, Pa.
Jones & Laughlin Steel Co.		
Henry Kreiger McConnell,	B. S.,	West Nashville, Tenn.
Chemist Federal Chemical Co.		
Oscar Franklin McNairy,	B. E.,	Greensboro, N. C.
Employ of Seaboard Air Line Railway.		
Eugene Franklin Meador,	B. E.,	Danville, Va.
Machinist Riverside Cotton Mills.		
Bennett Taylor Mial,		Gadsden, Ala.
Resident Engineer McClintoc-Marshall Construction Co., Pittsburgh, Pa.		
Frank Curtis Michael,	B. E.,	New York.
Erecting Engineer Consolidated Engine Stop Co.		

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†Not heard from this year.

Name.	*Degree.*	*Address.*
John Maple Mills,	B. E.,	Raleigh, N. C. Raleigh and Southport Railroad.
Henry Starbuck Montague,	B. S.,	Agricultural College, Miss. Assistant to State Chemist.
John Lightfoot Morson,	B. E.,	Raleigh, N. C. Civil Engineer Seaboard Air Line Railway.
James Elwood Overton,†	B. Agr.,	Ahoskie, N. C. Dealer in Peanuts.
Thomas Franklin Parker,	B. Agr.,	Rome, Ga. M. S. 1908. Agriculturist Berry School.
Fred Maynard Parks,	B. E.,	Wilkinsburg, Pa. Westinghouse Electric and Manufacturing Co.
Arthur Lee Paschal,	B. Agr.,	Labaina, H. I. Territorial Government School.
Guy Pinner,	B. E.,	Wilmington, Del. Structural Draftsman The American Bridge Co.
Winslow Gerald Pitman,†	B. E.,	Cumberland, Md. McClintic-Marshall Construction Co., Pittsburg, Pa. Home address, Lumberton, N. C.
James Kemp Plummer,	B. S.,	Ithaca, N. Y. M. S. 1909. Assistant in Chemistry Cornell University.
Leon Jacob Schwab,	B. E.,	Savannah, Ga. Civil Engineer Central of Georgia Railway.
John Oscar Shuford,	B. E.,	Lincolton, N. C. Superintendent Lincolnton Electric Light Plant.
Vance Sykes,	B. E.,	Wilmington, N. C. Assistant Engineer Seaboard Air Line Railway.
Luther Russell Tillett,	B. E.,	Manila, P. I. Civil Engineer, Bureau of Lands.
William Brooks Truitt,	B. E.,	Greensboro, N. C. Greensboro Boiler and Machine Works.
John Ed. Turlington,	B. Agr.,	Ithaca, N. Y. Graduate Student Cornell University.
Edmund Farriss Ward,	B. Agr.,	Smithfield, N. C. Lawyer.
Lindsay Marade Weaver,	B. E.,	Lexington, N. C. Bookkeeper, Cotton Mills.
John Jackson Wells,	B. E.,	Rocky Mount, N. C. Civil Engineer.
David Lyndon White,†	B. Agr.,	Greensboro, N. C., R. 2. Dairyman Greensboro Creamery.
Cecil Bernard Whitehurst,	B. E.,	Philadelphia, Pa. Salesman Western Electric Co.
Arthur John Wilson,	B. S.,	Ithaca, N. Y. M. S. 1908. Assistant in Chemistry, Cornell University.

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†Not heard from this year.

CLASS OF 1908.

Name.	*Degree.*	*Address.*
John Camillus App,†	B. S.,	Charleston, W. Va. Chief Chemist and Bacteriologist Kanawha Water and Light Co.
Frank Oscar Baldwin,	B. S.,	Saltville, Va. Mathieson Alkali Works.
George Francis Bason,	B. E.,	Ampere, N. J. Crocker-Wheeler Electric Co.
John Leland Becton,	B. E.,	Wilmington, N. C. Deputy City Engineer.
Harwood Beebe,†	B. E.,	Spies, N. C. Farming.
William Lamar Black,†	B. E.,	Rock Hill, S. C. Southern Power Co.
Asa Gray Boynton,	B. E.,	Biltmore, N. C. Landscape Engineer Vanderbilt Estate.
Frank Hamilton Brown,	B. Agr.,	Cullowhee, N. C. Teacher Cullowhee Normal and Industrial School.
John Harvey Bryan,	B. E.,	Washington, N. C. Superintendent Electric Light Plant.
William Bryant Burgess,	B. E.,	Portsmouth, Va. Electrical Draftsman, Navy Yard.
Lewellyn Hill Couch,	B. E.,	Hamlet, N. C. Southern Bell Telephone and Telegraph Co.
Claud Council Dawson,	B. E.,	Charlotte, N. C. Mayes Manufacturing Co.
Alvin Deans Dupree,†	B. E.,	Greenville, N. C.
Raymond Rowe Eagle,	B. Agr.,	New Bern, N. C. Civil Engineer, Brown & Eagle.
Minnic Luther Eargle,	B. Agr.,	Yadkin Valley, N. C. Agriculturist Patterson School.
Isaac Herbert Farmer,	B. E.,	Portsmouth, Va. Draftsman Seaboard Air Line Railway.
Benjamin Troy Ferguson,	B. Agr.,	Pomona, N. C. Farm Superintendent J. Van Lindley Nursery Co.
Percy Leigh Gainey,	B. Agr.,	West Raleigh, N. C. Instructor N. C. College of Agriculture and Mechanic Arts.
Junius Talmage Gardner,	B. E.,	Shelby, N. C. Shelby Insurance and Realty Co.
Seth Mann Gibbs,		Birmingham, Ala. Civil Engineer Seaboard Air Line Railway.
Maurice Mordecai Glasser,†	B. E.,	Charleston, S. C.
Moses Henry Gold,		Monroe, N. C. Civil Engineer Seaboard Air Line Railway.

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†Not heard from this year.

Name.	*Degree.*	*Address.*
John David Grady, Manager of Dairy Farm.	B. Agr.,	Columbus, Ga., R. 4.
Dorsey Yates Hagan,† Bandy & Myers, Consulting Engineers.	B. E.,	Greensboro, N. C.
Maurice Hendrick, Cliffside Cotton Mills.	B. E.,	Cliffside, N. C.
Herbert William Kueffner, Civil Engineer with Gilbert C. White.	B. E.,	Durham, N. C.
Claude Milton Lambe, Assistant Resident Engineer Winston-Salem Southbound Railway.	B. E.,	Norwood, N. C.
Charles Edward Latta, Grocer.	B. E.,	Raleigh, N. C.
David Lindsay, Assistant Superintendent German-American Co.	B. E.,	Draper, N. C.
John Henry Little, General Electric Co.	B. E.,	Pittsfield, Mass.
George Lafayette Lyerly, Shuford Hardware Co.	B. E.,	Hickory, N. C.
Clarence Talmage Marsh, Second Lieutenant U. S. Army.	B. E.,	Fort McKinley, Me.
David John Middleton, Farming. Employ of G. B. D. Parker.	B. Agr.,	Warsaw, N. C.
Benjamin Franklin Pittman,† Virginia Passenger and Power Co.	B. E.,	Richmond, Va.
Lawrence Lyon Pittman, Civil Engineer and Surveyor.	B. E.,	Whitakers, N. C.
Ruble Isaac Poole, Student Cornell University.	B. E.,	Ithaca, N. Y.
Harry Alexander Powell, Turpentine Business.	B. E.,	Melbourne, Fla.
James Alexander Powell, Apprentice Engineer Westinghouse Machine Co.	B. E.,	Wilkinsburg, Pa.
Thomas Milton Poyner, Civil Engineer Seaboard Air Line Railway.	B. E.,	Aberdeen, N. C.
Edgar English Smith,† Deck Officer U. S. Coast and Geodetic Survey.	B. E.,	San Juan, Porto Rico.
James Lawrence Smith, Jr., Assistant Engineer Raleigh and Southport Railway.	B. E.,	Fayetteville, N. C.
Jesse Page Spoon, Kansas City Veterinary College.	B. Agr.,	Kansas City, Neb.
John Snipes Stroud, Durham Hosiery Mill Co.	B. E.,	Chapel Hill, N. C.
John Lawrence Von Glahn, Instructor N. C. College of Agriculture and Mechanic Arts.	B. E.,	West Raleigh, N. C.

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†Not heard from this year.

Name.	*Degree.*	*Address.*	
Royall Edward White,	B. E.,	Aulander, N. C.	Civil Engineer.
John C. Williams,	B. E.,	Savannah, Ga.	Draftsman Central of Georgia Railroad.
Woodfin Bradsher Yarbrough,	B. E.,	Locust Hill, N. C.	Farming.
John Frankiln Ziglar,	B. E.,	Winston-Salem, N. C.	Draftsman Winston-Salem Southbound Railway.

CLASS OF 1909.

Name.	*Degree.*	*Address.*	
John Allen Arey,	B. S.,	West Raleigh, N. C.	Instructor N. C. College of Agriculture and Mechanic Arts.
William Herbert Doughty Banck,	B. E.,	Montgomery, Ala.	Draftsman U. S. Engineering Office.
Cecil DeWitt Brothers,	B. E.,	Knight's Key, Fla.	Florida East Coast Railway, Pigeon Key Camp.
Thorne McKenzie Clark,	B. E.,	Raleigh, N. C.	Commercial National Bank.
Walter Miller Cowles,	B. E.,	Ithaca, N. Y.	Student at Cornell University.
Joseph Frank Davidson,	B. E.,	Norwood, O.	Electrical Testing Department, Allis-Chalmers Co.
William Samuel Dean,	B. E.,	Henderson, N. C.	Textile Work. (Home address, Oxford, N. C., R. F. D. 2.)
Carlton O'Neal Doughtery,	B. E.,	Bellamy, S. C.	Belton Cotton Mills.
Fred Atha Duke,	B. E.,	Raleigh, N. C.	Civil Engineer Club Construction Co.
William Hunt Eaton,	B. S.,	Raleigh, N. C.	Assistant State Dairying, N. C. Department of Agriculture. (Home address, Cleveland, N. C.)
Ralph Ringgold Faison,	B. S.,	Manila, P. I.	Philippine Constabulary, Third Lieutenant.
William Alexander Faison,	B. E.,	Champaign, Ill.	Student University of Illinois.
Frank Lindsay Foard,	B. S.,	Winston Salem, N. C.	Reid Grocery Co.
Roscoe Loomis Fox,	B. E.,	Kannapolis, N. C.	Working Through Mill.
Lewis Price Gattis,	B. E.,	Wilmington, N. C.	Civil Engineer Atlantic Coast Line Railroad.
Albert Sidney Johnston Goss,	B. E.,	Union, S. C.	Assistant Engineer Hydro-Electric Department, Southern Power Co.

Name.	*Degree.*	*Address.*
Charlie Pool Gray,	B. E.,	Buxton, N. C.
Andrew Hartsfield Green,	B. S.,	Raleigh, N. C.
William Roy Hampton,	B. S.,	Plymouth, N. C. General Manager W. H. Hampton Co.
John William Harrelson,	B. E.,	West Raleigh, N. C Instructor N. C. College of Agriculture and Mechanic Arts.
Gordon Harris,	B. E.,	Schenectady, N. Y. Student Engineer General Electric Co.
Thomas Frederick Haywood,	B. E.,	Trenton, N. C.
Leonard Henderson,	B. E.,	Wilkinsburg, Pa. Westinghouse Electric and Manufacturing Co.
Bascombe Britt Higgins,	B. S.,	West Raleigh, N. C. Instructor N. C. College of Agriculture and Mechanic Arts.
Daniel Harvey Hill, Jr.,	B. S.,	Princeton, N. J. Student Princeton University.
Wayne Arington Hornaday,	B. S.,	West Raleigh, N. C. Instructor N. C. College of Agriculture and Mechanic Arts.
John William Ivey,	B. E.,	Macon, Ga. Erecting Machinist, Murph Machinery Co.
William Fladger R. Johnson,	B. E.,	Dillon, S. C. Civil Engineer, J. M. Johnson, Marion, S. C.
Frederick John Jones,	B. E.,	New Bern, N. C. Surveyor U. S. Engineering Department.
James Edward Latham,	B. S.,	Manila, P. I. Philippine Constabulary, Third Lieutenant.
Ralph Long,	B. S.,	Suffolk, Va. Grain Business.
Samuel Huxley McNeely,	B. E.,	Schenectady, N. Y. Testing Engineer, General Electric Co.
Samuel Macon Mallison,	B. E.,	Washington, N. C.
William Royden Marshall,	B. E.,	Swissvale, Pa. Apprentice and Erecting Engineer, Westinghouse Machine Co.
Ralph Cecil Mason,	B. S.,	Edenton, N. C. Farming for J. W. Mason.
Arthur Ballard Massey,	B. S.,	Gainesville, Fla. Assistant Entomologist, Experiment Station.
Walker Morehead Millner,	B. E.,	Spray, N. C. Working Through Mill.
Benjamin Franklin Montague,	B. E.,	Winston-Salem, N. C. Assistant Engineer, with J. N. Ambler.
William Flaud Morris,	B. E.,	West Raleigh, N. C. Instructor N. C. College of Agriculture and Mechanic Arts.
Samuel Loftin Oliver,	B. E.,	East Norwood, Ohio. Graduate Student, Allis-Chalmers Co., Bullock Works.

Name.	*Degree.*	*Address.*	
Julius Monroe Parker,	B. E.,	Charlotte, N. C.	Draftsman, General Fire Extinguisher Co.
John Gilbert Paschal,	B. E.,	St. Louis, Mo.	Missouri Pacific Railroad.
Peter Penick Pierce,	B. E.,	Knight's Key, Fla.	Florida East Coast Railway, Pigeon Key Camp.
Paul Miller Pitts,	B. E.,	Greensboro, N. C.	Mechanical Engineer, Greensboro Boiler and Machine Co
John Moir Price,	B. E.,	South Bethlehem, Pa.	Student Lehigh University.
Robert Richard Reinhardt,	B. S.,	Raleigh, N. C.	Graduate Student North Carolina College of Agriculture and Mechanic Arts.
Alfred Pratte Riggs,	B. E.,	Knight's Key, Fla.	Florida East Coast Railway, Pigeon Key Camp.
Joseph Henry Robertson,	B. E.,	Greensboro, N. C.	Electric Meterman, North Carolina, Public Service Co.
James Olin Sadler,	B. E.,	Louisville, Ky.	L. & N. Railway.
Francis Webber Sherwood,	B. S.,	West Raleigh, N. C.	Assistant Chemist North Carolina Agricultural Experiment Station.
Robert Arnold Shope,	B. E.,	Manila, P. I.	Philippine Constabulary, Third Lieutenant.
George Gray Simpson,	B. E.,	Charlotte, N. C.	Associate Editor Textile Manufacturer.
William Neville Sloan,	B. E.,	Franklin, N. C.	Sloan Brothers, Merchant.
Hugh Stuart Steele,	B. E.,	Knight's Key, Fla.	Florida East Coast Railway, Pigeon Key Camp.
Samuel Fatio Stephens,	B. E.,	West Raleigh, N. C.	Instructor North Carolina College of Agriculture and Mechanic Arts.
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Claude Stratton Tate,	B. E.,	Littleton, N. C.	Machinist, Sterling Manufacturing Co.
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John Spicer Wilson,	B. E.,	Cincinnati, Ohio.	Testing Department Allis-Chalmers Co.
Paul Adams Witherspoon,	B. E.,	South Bethlehem, Pa.	Student Lehigh University.
Robert Job Wyatt,	B. E.,	Raleigh, N. C.	Clerk Job P. Wyatt & Son.

THE

NORTH CAROLINA COLLEGE

OF

Agriculture and Mechanic Arts

WEST RALEIGH

1910-1911

OCTOBER 3. 1889.

RALEIGH
Edwards & Broughton Printing Co., State Printers and Binders
1911

CALENDAR.

JANUARY, 1911.

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College Calendar.

1911.

Thursday,	July	13,	Entrance examination at each county courthouse, 10 A. M.
Wednesday,	September	6,	Entrance examination at the College, 8.30 A. M.
Wednesday,	September	6,	Examinations to remove Conditions.
Thursday,	September	7,	First Term begins; Registration Day.
Thursday,	November	30,	Thanksgiving Day.
Wednesday,	December	20,	First Term ends.

1912.

Wednesday,	January	3,	Second Term begins; Registration Day.
Saturday,	March	16,	Second Term ends.
Monday,	March	18,	Third Term begins.
Sunday,	May	26,	Baccalaureate Sermon.
Monday,	May	27,	Alumni Day. Annual Oration.
Tuesday,	May	28,	Commencement Day.

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Board of Trustees.

Name.	*Post-office.*	*Term Expires.*
J. O. Ellington	Fayetteville	March 20, 1913.
W. E. Daniel	Weldon	March 20, 1913.
W. H. Ragan	High Point	March 20, 1913.
W. B. Cooper	Wilmington	March 20, 1913.
M. B. Stickley	Concord	March 20, 1915.
T. T. Ballenger	Tryon	March 20, 1915.
N. B. Broughton	Raleigh	March 20, 1915.
O. L. Clark	Clarkton	March 20, 1915.
Everett Thompson	Elizabeth City	March 20, 1917.
R. H. Ricks	Rocky Mount	March 20, 1917.
O. Max Gardner	Shelby	March 20, 1917.
M. L. Reed	Biltmore	March 20, 1917.
E. M. Koonce	Jacksonville	March 20, 1919.
C. W. Gold	Raleigh	March 20, 1919.
T. E. Vann	Como	March 20, 1919.
D. A. Tompkins	Charlotte	March 20, 1919.

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R. H. Ricks.

M. B. Stickley.

C. W. Gold, *Secretary.*

N. B. Broughton.

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WILLIAM HAND BROWNE, Jr., A.B., Professor of Physics and Electrical Engineering.

HOWARD ERNEST SATTERFIELD, M.E., Professor of Mechanical Engineering.

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BARTHOLOMEW MOORE PARKER, B.S., Assistant Professor of Textile Industry.

CARROLL LAMB MANN, B.S., C.E., Assistant Professor of Civil Engineering.

GEORGE SUMMEY, Jr., Ph.D., Assistant Professor of English.

RALPH INGRAM SMITH, B.S., Assistant Professor of Zoology and Entomology.

WELDON THOMPSON ELLIS, M.E., Assistant Professor of Mechanical Engineering.

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JOHN STRAUCHON JEFFREY, Assistant Professor of Poultry Husbandry.

CHARLES BENJAMIN PARK, Instructor in Machine Shop.

✓ ABRAHAM RUDY, A.M., Pd.D., Instructor in Modern Languages.

WILEY THEODORE CLAY, M.E., Instructor in Woodworking and Patternmaking.

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JOHN EDWARD HALSTEAD, B.S., Instructor in Dyeing.

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ROBERT PEACHY LATANE, B.S., Instructor in Physics.

LLOYD B. SELBY, M.E., Instructor in Drawing.

FRED BARNET WHEELER, Instructor in Forge.

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BURTON JUSTICE RAY, A.B., Ph.D., Instructor in Chemistry.

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WARREN CARNEY NORTON, Ph.B., Instructor in Bacteriology.

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JOSEPH DAGGETT CECIL, V.M.D., Assistant in Anatomy and Physiology.

HARRY TUCKER, B.A., B.S., Instructor in Mathematics and Civil Engineering.

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HARRY HOUSTON PECKHAM, A.B., Instructor in English.

WILLIAM FRANKLIN PATE, B.S., Instructor in Chemistry.

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EDSON DANA SANBORN, B.S., Instructor in Dairying.

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GUY WEST WILSON, B.S., A.M., Assistant in Vegetable Pathology.

THOMAS BARNES STANSEL, B.S., Assistant Bacteriologist.

ARTHUR FINN BOWEN, Bursar.

MISS NELLIE FORT, Stenographer.

MISS LOULA V. SHERWOOD, Secretary and Stenographer.

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Commandant of Cadets.

CAPTAIN WILLIS G. PEACE, U. S. Army.

Cadet Major.

J. T. PEDEN.

Battalion Staff.

J. H. BROWN, First Lieutenant and Adjutant.
J. L. MARTIN, First Lieutenant and Quartermaster.

Noncommissioned Staff.

O. W. SMITH, Sergeant-Major.
W. T. SHULL, Quartermaster Sergeant and Color Sergeant.
J. R. MULLEN, Chief Trumpeter.

Band.

J. W. ROLLINSON, Captain.
G. K. BRYAN, First Lieutenant.
C. D. BAUCOM, Second Lieutenant.
L. E. STEERE, Second Lieutenant.
J. E. McGEE, First Sergeant.
H. P. MURRAY, Sergeant.
McN. DuBOSE, Sergeant.
R. F. GIERSCH, Sergeant.

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W. H. DAVIS, Captain.
M. F. WYATT, First Lieutenant.
T. D. HARRIS, Second Lieutenant.
E. T. WADSWORTH, Second Lieutenant.
R. C. DEAL, First Sergeant.
J. C. SMALL, Sergeant.
W. P. SUGG, Sergeant.

R. W. HOWELL, Sergeant.
A. H. BOND, Sergeant.
C. J. LAMBETH, Sergeant.
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E. J. JEFFRESS, Corporal.
S. K. KELLER, Corporal.
R. T. MELVIN, Corporal.
W. T. NIXON, Corporal.
C. C. WILSON, Corporal.

Company B.

F. T. PEDEN, Captain.
WILLIAM BAILEY, First Lieutenant.
T. C. BARBER, Second Lieutenant.
H. M. WALTON, First Sergeant.
C. E. BROWN, Sergeant.
L. N. RIGGAN, Sergeant.
H. L. TAYLOR, Sergeant.
T. P. LOVELACE, Sergeant.
G. L. BAIN, Corporal.
R. D. GOODMAN, Corporal.
E. B. HUNTER, Corporal.
J. B. MAYES, Corporal.
W. H. PARKER, Corporal.
G. T. ROTH, Corporal.
J. R. KIKER, Corporal.

Company C.

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C. A. SPEAS, First Lieutenant.
V. P. BYRUM, Second Lieutenant.
H. P. WHITTED, First Sergeant.
F. B. SHERWOOD, Sergeant.
S. B. HOWARD, Sergeant.

C. A. STEDMAN, Sergeant.
C. W. LEE, Sergeant.
J. J. DUNLAP, Corporal.
F. S. HALES, Corporal.
W. L. BLOOMER, Corporal.
W. R. CLEMENTS, Corporal.
T. J. HEWITT, Corporal.
L. B. KNIGHT, Corporal.
J. J. PHILLIPS, Corporal.

Company D.

F. G. TUCKER, Captain.
J. P. QUINERLY, First Lieutenant.
C. E. BELL, Second Lieutenant.
P. B. FEREBEE, First Sergeant.
J. G. KELLOGG, Sergeant.
M. F. SUGG, Sergeant.
B. L. CALDWELL, Sergeant.
A. W. TAYLOR, Sergeant.
A. K. ROBERTSON, Sergeant.
M. S. WHITE, Corporal.
H. S. HARRISON, Corporal.
E. D. BOWDITCH, Corporal.
W. B. MARSH, Corporal.
H. A. QUICKEL, Corporal.
E. C. LATHAM, Corporal.
G. T. ROWLAND, Corporal.
T. R. HART, Corporal.

Company E.

P. N. PITTENGER, Captain.
G. L. THOMPSON, First Lieutenant.
C. L. CRUSE, Second Lieutenant.
C. HORN, First Sergeant.
S. T. MITCHINER, Sergeant.

C. M. NEWCOMB, Sergeant.
W. R. MANN, Sergeant.
W. H. GRAHAM, Sergeant.
R. M. HARDISON, Sergeant.
J. I. McCALLUM, Corporal.
P. D. DAVIS, Corporal.
L. L. DAIL, Corporal.
J. B. COWARD, Corporal.
J. O. RANKIN, Corporal.
P. A. HOLT, Corporal.
L. L. MERRITT, Corporal.

General Information.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890 and the "Nelson Act" of 1907, and by State appropriations.

The College is beautifully located on the extension of Hillsboro street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns four hundred and eighty-five acres of land. Fifteen hundred young trees and nine hundred and forty vines are growing in an orchard of sixteen acres. Seven acres are devoted to truck growing. The campus consists of about thirty acres of rolling land, which is being improved as rapidly as circumstances permit.

BUILDINGS.

The Administration Building is of brick, with brownstone trimmings, and is one hundred and seventy by sixty-four feet; part four stories in height and the remainder two. The lower floors contain the offices of the President, the Dean, the Commandant, the Registrar, and the Bursar, and several recitation rooms. The upper stories are occupied by students.

In this, as in other buildings, every precaution has been taken to secure good sanitation. The rooms are well lighted, well ventilated, and conveniently arranged.

The Mechanical Engineering Building is a plain, substantial two-story brick building, with large annex. It contains the drawing-rooms, recitation-rooms, and shops of the department.

Primrose Hall is a two-story brick building used for Y. M. C. A. headquarters and assembly room.

The Textile Building is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Its construction is similar to that of a cotton mill, and is an illustration of standard construction of this class of buildings. The basement contains the dyeing department, the first floor the looms and warp-preparation machinery, and the second floor the carding and spinning machinery.

Pullen Hall was named in honor of the late R. Stanhope Pullen, the greatest benefactor of the College. The basement of this building is used as a dining room, and seats five hundred students. The first story is used for library, reading room, and lecture rooms. The second story serves as the College auditorium. This building is commodious, comfortable, and well lighted.

The Agricultural Hall is a three-story buff press-brick building with granite trimmings, and is two hundred and four by seventy-four feet. The lower or basement floor contains the class rooms and laboratories for work in the Department of Animal Husbandry and Dairying. Ample provision is made for butter-making and stock-judging. The second floor contains the offices of the department, class rooms for animal husbandry and agronomy, and laboratories for soil physics and agricultural machinery. On the top floor are the rooms devoted to botany and vegetable pathology, zoology, physiology, and veterinary medicine. There are well-equipped class rooms and large, well-lighted laboratories. The building affords excellent accommodations for education in agriculture and allied subjects, and is especially adapted to its needs.

Engineering Building.—The Engineering Building is of brick, with reinforced concrete floors, three stories high, including the basement. It consists of a main section, one hundred and four by fifty-eight feet, with two wings, each ninety-one by thirty-two feet. The basement contains the laboratories and instrument rooms of the Departments of

Electrical and Civil Engineering. The main floor has the lecture, recitation, and drafting rooms and the offices of the same two departments. The second floor contains the lecture and recitation rooms and the laboratories and offices of the Department of Chemistry and the Chemical Department of the State Experiment Station.

The Foundry is a one-story brick building with a brick stack. It contains a 36-inch cupola furnace; a Griffin Oil Furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven, and benches and hand tools for moulding in the course of exercises, as well as for any repair work required by the College.

The Electrical Laboratory is a one-story brick building. It is equipped with modern electrical apparatus for the use of the Junior and Senior classes.

Dormitories.—The College has the following dormitories:

1. Watauga Hall, a three-story brick building, trimmed with brownstone and containing sixty rooms. In the basement there are bath rooms for the students.

2. A large three-story brick dormitory, which was finished in 1909. This building is two hundred and twenty-five feet long by fifty-two deep. It is divided by fire walls into sections of twelve rooms each. It furnishes room for one hundred and thirty students. This dormitory is also supplied with a large and convenient bath room.

3. In addition to these two large buildings, four other brick buildings are set apart exclusively for student homes. One of these is a three-story building; three are two-story buildings.

All of the dormitories are lighted by electricity and heated by steam.

Barns.—Three large barns are a part of the agricultural equipment. One of these, used for the herd of cows, is a modern sanitary barn, equipped with the James Sanitary Fixtures and admirably lighted and ventilated. The other two are for the work animals and for storage.

The Infirmary is a two-story brick building, containing a sitting-room, seven bedrooms, three bath rooms, a kitchen, linen room, the College Physician's office, and a medicine chest. The rooms are large, well ventilated, well lighted, and heated by steam. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

A Central Power Plant furnishes heat, light, and power for all the buildings, and is also used for instruction work. The boiler plant consists of two 75-horse-power Babcock and Wilcox and two 100-horse-power Atlas Water-Tube boilers, with a working steam pressure of 150 pounds. The engine plant consists of a 100-horse-power Skinner engine and Crocker-Wheeler generator attached; a 100 K. W. De Laval turbine generator set with self-exciter; a 10 K. W. steam-driven exciter set, and steam and vacuum pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren-Webster system of heating.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, standpipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch, of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in the Agricultural Building. The laboratories are, some of them, in the same building; the rest are (after June, 1911) in the new Engineering Building. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Publications relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in many lines of industry in which training and skill are requisite to success It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill workers, manufacturers, stock raisers, fruit growers, truckers, and dairymen, by giving them not only a liberal but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Metallurgy, Chemistry, Dyeing, Textile Industry, and Agriculture. It also offers practical training in Carpentry, Woodturning, Blacksmithing, Machinist's work, Mill work, Boiler tending, Engine tending, Dynamo tending and Installation, Electric-light Wiring, Armature Winding, and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, Political Economy, Physics, Chemistry, Botany, Zoology, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

It is taken for granted that students in the College are here to get an education. They are expected, therefore, to attend classes, lectures, laboratories, shop-work, drills, inspections, etc., without being reminded of such duties each day, week, or month.

Students can not properly prepare for and perform these duties if they spend time in Raleigh or absent themselves from work and study. They are expected, therefore, to observe study hours in their rooms and refrain from visiting Raleigh, except when permitted by the rules of the College.

Students are also expected to keep their rooms neat and orderly; to refrain from noise during study hours, and from disorderly conduct at all times and places; in short, to live like gentlemen.

Hazing new students, cigarette smoking, drinking, gambling, card playing, visiting pool rooms and all improper places, loafing on the streets, and other like vicious, idle, unhealthy and unprofitable performances are prohibited by the College rules.

A record is kept of every student in College; of his failure to perform duty and his infractions of the rules. When this record shows that a young man is not in College for the purpose of getting an education, and is not using his opportunties properly, he will be required to withdraw. For scandalous and vicious offenses students will be dismissed. The rules of the College are intended solely to promote manliness, to form habits of order, punctuality, promptness and fidelity to duty, as well as simplicity, economy and healthfulness of living; and to prevent habits of idleness, disorder, extravagance, and vice.

Every effort is made to develop strong, intelligent, and high-natured men, and proper patience, sympathy, and forbearance are exercised in trying to bring about this great result, but the College will not retain a young man who continues idle, vicious, or incompetent.

If at any time a student shows by lack of study or by general conduct that he is not being benefited by his stay in College, his parents will be asked to withdraw him.

PRIZES.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live stock Exhibit at the State Fair.

A gold medal is awarded to the Senior speaker who makes the best oration on Commencement Day.

The National Association of Cotton Manufacturers offers annually a medal to the student in the Textile Department who has the highest proficiency in his work.

HAZING.

There has been no hazing of any sort in College for several years. The present sentiment of the student body is opposed to this practice in our College, and its management feels sure that there will be no hazing during the next year.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself nor to the College.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization among the students for the purpose of centralizing and directing the moral and religious life of the student body. The work is under the direction of a General Secretary, who is employed to give his entire time to the work, and, of the following student officers, president, vice-president, corresponding and recording secretaries, and treasurer. Active assistance is also given by an Advisory Committee, which includes three members of the Faculty and six prominent business men in Raleigh. The president and treasurer of the Association are *ex officio* members of this committee.

Membership is open to all College students of good moral character. Only members of evangelistical churches may become active members.

A hand-book, giving general information about the College, is published each spring and sent to prospective students with a personal letter of welcome from the officers of the Association.

A large number of men are trained each year in active Christian service through membership on the following standing committees, all of which are trained by the General Secretary in their particular work: Bible Study Committee, which has charge of the organization of voluntary Bible Study classes among the students, and in this way seeks to reach all of the non-Christian element of the student body; Religious Meetings Committee, which provides speakers and arranges programmes for the weekly meetings of the Association; Mission Study Committee, which provides for Mission Study among the students; Membership Committee, which seeks to enlist students as members of the Young Men's Christian Association; Social Committee, which provides means of social entertainment and diversion; and Finance Committee. Each committee is held responsible for its part of the Association activities.

The Association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership fees. Although membership is voluntary, it is designed that all students should apply for membership and thereby align themselves with an organization which will assist them in leading an upright life while in College.

The Association maintains headquarters in Primrose Hall, which is fitted up with reading matter, small games, etc., and serves as an office for the General Secretary. A suitable building, to cost $40,000, and to be furnished with all modern equipments, will be erected in the course of the current school year by the Association.

Any further information may be obtained by addressing the General Secretary, Y. M. C. A., West Raleigh, N. C.

ATHLETICS.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty, it promotes practice in baseball, basketball, football, track athletics, etc.

The Athletic Park is situated in the center of the College buildings. It is provided with a grandstand and uncovered seats, and meets amply the needs of the various athletic teams.

LIBRARY AND READING ROOMS.

The College Library occupies the first story of Pullen Hall. The reading room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about six thousand five hundred volumes. There are also reference libraries in the different departments. The library is kept open from 9 a. m. to 6 p. m. The Librarian is always present to assist students in finding desired information.

The Olivia Raney Library in Raleigh, containing now about ten thousand volumes, is free to the students, and they have the privilege of borrowing books from it. Students are also allowed to consult books in the State Library.

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific, and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to ten. The Society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical problems. The meetings are conducted in the manner of a Farmers' Institute, and give training in conducting farmers' meetings, in extempore speaking on agricultural questions, and in the writing and reading of reports on various farm operations.

The Rural Science Club meets semi-monthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semi-monthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every week for the discussion of mechanical subjects. The society is composed of Seniors and Juniors taking the Mechanical Engineering Course. Its work has proved very beneficial to its members.

Electrical Society.—A student branch of the American Institute of Electrical Engineers has been organized, and holds regular meetings to read and discuss the papers presented before the Institute, and to hear original papers prepared by its own members or by visiting engineers.

The Vorwaerts Verein (Forward Society) is a society for the promotion of interest in the study of German. Weekly meetings are held at which literary programmes are carried out in German, giving its members practice in expressing themselves in that language. Membership is open to students and members of the Faculty who have acquired sufficient knowledge to understand simple conversation in German.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on the Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration, and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

The Skinner Club meets semi-monthly for the discussion of agricultural and farm-life subjects, and for reports on Agricultural publications and other subjects of especial interest to the Work Course students.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age, and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

To the Two-year Courses.—Applicants for admission to the two-year courses in Mechanic Arts and Textile Industry will be examined on Arithmetic (through common and decimal fractions), English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the one-year course in agriculture will be required to pass the same examination as for the two-year course.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each courthouse in the State at 10 o'clock a. m. the second Thursday in July of each year. The date for 1911 is July 13th. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or in case there should not be room enough for him in the College. Entrance examinations will be held also at the College at 8:30 o'clock a. m. on the Wednesday preceding the opening day. The examinations begin with English at 8:30 a. m., in Room 21, Administration Building, followed by Mathematics at 10, and History at 2, in the same room. The date for 1911 is September 6th.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, if over eighteen years of age.
2. School teachers holding teachers' certificates, if the holders are sufficiently familiar with Algebra.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $225.00

The total average college expense of a Freshman student having a scholarship is $180.00.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies should be kept within reasonable bounds. From $50.00 to $100.00 per year are suggested as the minimum and maximum amounts.

This will make the total expense for all purposes of a Freshman student, without a scholarship, amount to from $275.00 to $325.00 for the entire session; or $230.00 to $280.00, if he has a scholarship.

Detailed Information.

The largest payment is made in September. On entrance a Freshman student will need $80.00 to meet all of his various payments for the first month. But of this amount, the payment of $22.50 for tuition may be deferred, if desired, to the first of November. This will reduce the first, or entrance, payment to $57.50. This amount includes pay-

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NOTE.—The College Bursar is forbidden by the Trustees to give credit.

ment to the College, $43.00; deposit with the dealer for uniform and cap, $5.00, and for the purchase of books and incidentals, $9.50. In the case of day students, or students rooming and boarding out of College, tuition will be paid on entrance.

Board is $10.00 per month, payable in advance on the first day of each calendar month from September through to May. Board for less time than one month is charged for at the rate of fifty cents a day, or $3.00 per week. Refunds for board will be made on the basis of these charges.

Students withdrawing from College within two weeks from date of entrance will be refunded all money paid by them to the College Bursar except charges for board and lodging during the time they are in College. In special cases the right is reserved to modify or to entirely revoke this rule.

Refunds to students withdrawing later than two weeks from date of entrance will be made in proportion to the length of time they are in College. The right in special cases to modify or to revoke this rule is reserved.

Expense by Months.

The following is a statement of the College expenses of a Freshman student by months, for Civil, Electrical and Mechanical Engineering Divisions:

September: Room rent, fuel and lights, $15.00; incidental fee, $2.00; medical and hospital fee, $3.00; lecture fee, $1.00; library fee, $1.00; furniture fee, $1.00; physical culture fee, $1.00; military equipment deposit, $5.00; mechanical and physical laboratory fees, $3.00; board for September, $10.00; a total of $42.00. Tuition for one half session, $22.50, may be paid at this time, which will make a total of $64.50. In addition, there is required by the merchant a deposit of $5.00 for uniform and cap when the measure of the student is taken; and about $10.00 is required to buy books, drawing instruments, and for incidentals. An Agricultural Freshman pays $1.50 more than the above. A Textile Freshman pays $1.00 less than the above. A Chemical Freshman pays $1.00 more than the above.

October: Board, $10.00, and balance to merchant for uniform and cap, $15.00.

November: Board, $10.00; tuition, if it was not paid in September, $22.50.

December: Board, $10.00.

January: Tuition, $22.50; lodging and fuel and lights, $15.00; medical and hospital fee, $3.00; furniture fee, $1.00; physical culture fee, $1.00; board, $10.00. A total of $52.50.

February: Board, $10.00.
March: Board, $10.00.
April: Board, $10.00.
May: Board, $10.00.

If the student has a scholarship, he does not pay tuition. **By recent action of the Trustees, board for the coming year may be fixed at $11.00 a month instead of $10.00, if present prices of provisions continue.**

Students entering after September will pay on entrance all the items enumerated under "September" less a credit in part for tuition and room rent.

The amount of the September, or entrance payment, for students in other than Freshman classes, varies slightly with the class, the course, and the division. This variation is caused by the additional collection of fees and deposits for laboratory work and for supplies. The amount of these fees and deposits is given in the table below, for all classes and courses. They vary widely in the Agricultural course; here the minimum and maximum amounts are given.

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students --	$0.00 to 18.00	$ 6.00 to 18.00	$ 7.50	Given on page 24	$----------	$ 2.00
C. E. " --	1.00	1.00	4.00		-----------	-----------
M. E. " --	2.00	3.00	6.00		2.00	2.00
E. E. " --	2.00	4.00	6.00		-----------	-----------
Chem. " --	14.00	13.00	4.00		-----------	-----------
Tex. " --	9.00	8.00	8.00		4.00	5.00

A fee of $1.50 will be collected from short-course students in dairying, agriculture, etc., for hospital and medical attention.

All unused deposits are refunded to the student at the end of the session or upon his withdrawal from College. If he has overdrawn his deposit, he is required to pay the amount of the overdraft.

ROOM FURNITURE.

The College rooms are supplied with necessary furniture. Each student, however, should bring with him two pairs of blankets, two pairs of sheets, one pillow and two cases, and two bedspreads for a single bed.

Overcoats may be brought from home, or purchased in the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy boys of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Some students who are alert and energetic frequently earn part of their expenses in College. Some of the agricultural students find work at odd hours on the farm, in the orchard, in the barn, in the dairy. Some students act as agents for laundries, for furnishing-houses, for pressing clubs. The College employs a few students for the dining room and for other purposes. A student's ability to keep himself will depend largely on his own power to find work and to hold it after he finds it. It must, however, be remembered that the duties of the class room take most of a student's time, and his hours for remunerative work are therefore limited.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at six per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who can not find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $3,885.92.

BOARD AND LODGING.

All students are expected to board in the College mess hall and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $10 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow cases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

DRILL.

In return for the Morrill Fund of the United States government, the College is under contract to require its students to drill at least three times each week and an army officer is detailed to conduct the drills. No student will be excused from drill unless the College Physician, after examination, deems him unfit for military duty.

UNIFORM.

The College uniform must be worn by all students when they are on military duty. It must be bought at the College from the regular contractor. The uniform is of strong gray cloth and with proper care should last one or two years.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College Physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College Physician visits the Infirmary daily at 3 o'clock p. m., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

VACCINATION.

By direction of the Trustees no young man will be registered unless he has been successfully vaccinated. The College greatly prefers that all applicants for admission should be vaccinated at home, and that a certificate of successful vaccination within the past two years be brought from the family physician. In case this can not be done, the College Physician will vaccinate applicants before they are registered at the College. A blank form to be filled by the home physician will be mailed on application. It will save a great deal of time and trouble, therefore, to be vaccinated before applying for registration.

Courses of Instruction.

The College offers the following courses of instruction:

I. Four-year Courses.

1st. Agriculture (including Agronomy, Soils and Drainage, Animal Husbandry and Dairying, Horticulture, Veterinary Science, Biology, Poultry Husbandry, and Agricultural Chemistry.

2d. Engineering (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Chemistry).

3d. Textile Industry or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate of the four-year course in Agriculture, in Chemistry, or in Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. Short Courses of one year, and two years (work course), in Agriculture, and of two years in Textile Industry, in the Mechanic Arts, (including Carpentry, Woodturning, Blacksmithing, Machine-shop Work, Drawing, and Dynamo and Engine Tending).

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training, and do not lead to a degree.

III. Winter Courses in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting seven weeks; and a one-week's course in Agriculture, beginning with the opening of the Winter Term.

IV. Normal Courses for the training of teachers in industrial subjects.

V. Graduate Courses, extending over two years and leading to advanced degrees, are intended for students who have completed the four-year courses and who desire further instruction and training in special subjects.

School of Agriculture.

a. The Four-year Course in Agriculture.
b. The One-year Course in Agriculture.
c. The Seven-weeks Course in Agriculture.
d. The One-week Course.
e. The May School for Teachers.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers five distinct courses:

a. The Four-year Course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course, more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of such studies as Mathematics, English Literature, Physics, etc., and they are not neglected in this course. **Full description of the Four-year Course begins on page 37.**

b. The One-year Course is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited; hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course. **The One-year Course is described on page 106.**

c. **The Seven-weeks Winter Course** is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention. **The Seven-weeks Course is described on page 112.**

d. **The One-week Course** precedes the seven-weeks course and is devoted entirely to the study of corn, from the preparation of the soil to the marketing of the crop. Emphasis is given soil preparation, rotation, fertilization, cultivation, seed selection, insect pests, diseases, etc. **The One-week Course is described on page 110.**

f. **The May School** is intended to meet the needs of teachers who wish to make themselves more proficient in Agriculture and nature study. **The May School Course is described on page 129.**

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming, and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices on yield and on fertility, and in varieties of fruit, of vegetables, and of forage crops. The methods employed and the results obtained are freely used for instruction.

1. Four-year Course in Agriculture.

This course leads to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK. †		
	1st Term.	2d Term.	3d Term.
Mathematics, 110, 111 ‡	5	5	5
English, 120	3	3	3
Botany, 30	3	3	3
Agriculture, 1	3	--	--
Animal Husbandry, 40	--	3	3
Chemistry, 90	3	3	3
Drawing, 142	2	--	--
Physiology, 60	--	2	2
Military Drill, 150	3	3	2

Sophomore Year.

Dairy, 48	4	--	--
Physiology, 60	2	--	--
Poultry, 50	--	3	3
Plant Diseases, 32	3	--	--
Wood Shop, 140	--	2	--
Forge, 141	--	--	2
Vegetable Gardening, 20	--	4	1
Systematic Botany, 31	--	--	3
Zoology, 80	2	2	--
Entomology, 81	--	--	2
Chemistry	3	3	3
Physics, 100	2	2	2
English, 121	3	3	3
Tactics, 151	1	1	1
Military Drill, 150	3	3	2

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† The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

‡ The figures immediately following the name of the study are given to aid one in finding readily a description of the study. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Animal Husbandry, 41, 42, 43	3	3	3
Soils, 10	3	3	3
Entomology,* 81	2	--	--
Farm Crops, 3	2	2	2
Farm Equipment,* 2	--	2	2
Agricultural Chemistry, 92	2	2	2
Bacteriology, 34	2	2	2
English, 122, 123	3	3	3
Elective	4	4	4
Military Drill 150	3	3	2

Junior Electives.

Fruit Culture, 21	4	4	--
Landscape Gardening, 22	--	--	4
Veterinary Medicine, 61, a, b, c	4	4	4
Anatomy and Clinics, 64, 67	3	3	3
Histology, 65	3	3	3
Language of Medicine, 66	1	1	1
German, 130, French, 131 Spanish, 132	3	3	3

Prerequisites to Senior Courses.

AGRONOMY DIVISION.

Fruit Culture, 21.
Landscape Gardening, 22.

ANIMAL HUSBANDRY DIVISION.

Veterinary Medicine, 61, a, b, c.

HORTICULTURAL DIVISION.

Fruit Culture, 21.
Landscape Gardening, 22.

NORMAL DIVISION.

Fruit Culture, 21.
Landscape Gardening, 22.

VETERINARY DIVISION.

Anatomy and Clinics, 64, 67.
Histology, 63.

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* Not required of veterinary students.

Senior Year.

(At least 22 periods a week of work to be carried.)

Agronomy Division.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Fertilizers, 11	2	--	--
Farm Management, 5	--	2	2
Special Crops, 4	3	3	3
Poultry, 51	--	--	3
Plant Breeding, 23	3	--	--
Drainage, 12	--	3	3
Live Stock Management, 44	3	3	3
Plant Diseases, 33	2	2	2
Economics, 125	1	1	1
Elective	8	8	8

Horticultural Division.

Farm Management, 5	--	2	2
Special Crops, 4	3	3	3
Fertilizers, 11	2	--	--
Plant Breeding, 23	3	--	--
Horticulture, 24, 25, 26	2	5	5
Plant Diseases, 33	2	2	2
Entomology, 82	2	2	2
Elective	8	8	8

Animal Husbandry Division.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Management, 5	--	2	2
Special Crops, 4	3	3	--
Fertilizers, 11	2	--	--
Poultry, 51	--	--	3
Live Stock Management, 44	3	3	3
Animal Breeding, 45, or Advanced Dairying, 49	3	--	--
Advanced Feeds, 46, or Dairy Bacteriology, 36	--	3	--
Market classes and Grades of Meat, 47, or Dairy Manufacture	--	--	3
Veterinary Medicine, 62	3	3	3
Economics, 125	1	1	1
Elective	7	7	7

Veterinary Division.

Anatomy, 68, and Clinics, 73	3	3	3
Advanced Physiology, 69	2	2	2
Pathology, 70	3	3	3
Materia Medica, 71	3	--	--
Physical Diagnosis, 72	--	3	3
Poultry, 51	--	--	3
Special Crops, 4	3	3	--
Live Stock Management, 44	3	3	3
Breeding, 45, Feeding, 46, Classes and Grades of Meat, 47	3	3	3
Elective	2	2	2

Normal Division.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Management, 5	--	2	2
Special Crops, 4	3	3	--
Fertilizers, 11	2	--	--
Poultry, 51	--	--	3
Live Stock Management, 44	3	3	3
Plant Diseases, 33	2	2	2
Mathematics	5	5	5
Elective	7	7	7

Electives.

English, 124	2	2	2
Advanced Soils, 13	3	3	3
Bacteriology, 35	3	3	3
Advanced Chemistry, 94	3	3	3
Advanced Physiology, 69	2	2	2
Histology, 63	3	3	3
French, German, Spanish, 130, 131, 132	3	3	3
Drill	3	3	2

Four-year Course in Agriculture.

EQUIPMENT.

In addition to Agricultural Hall, with its class rooms, laboratories, dairy, stock-judging room and offices, the College possesses the following equipment for instruction in Agriculture:

The farm includes four hundred and eighty-five acres, with two hundred and sixty acres under cultivation; a two-story sixteen-stall horse and storage barn; a fifty-stall dairy barn; silos with capacity for four hundred tons of silage; a No. 18 Ohio feed and ensilage cutter operated by an electric motor, and implements and machinery necessary for up-to-date farming.

The live stock consists of the necessary horses and mules, a herd of dairy cattle, and purebred swine. Breeding-stock is sold as a part of the farm products.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina; an incubator cellar with several makes of incubators; a brooder house heated by hot water; and several makes of indoor and outdoor brooders. The feed room is equipped with steam engine, grist and bone mills. Ten or fifteen varieties of poultry are kept, and eggs and breeding fowls are sold to the public.

The horticultural equipment consists of about thirty acres in tree fruit, nuts, vineyard, berries and vegetables, in appropriate assortment of classes and varieties for demonstration and instruction. These afford means for work in seed selection, bud studies, propagation, budding, grafting, transplanting, pruning, spraying, and variety study. The greenhouse affords means for starting vegetables and growing ornamental and exotic plants as well as for the illustration of interesting and instructive plant life phenomena.

The dairy equipment is complete and thoroughly modern. The laboratory occupies about four thousand feet of floor space in Agricultural Hall, and is equipped for instruction in farm dairying, retailing milk, creamery practice, cheese and butter-making, milk-testing, and pasteurizing. The dairy equipment is one of the most modern and complete to be found in the South.

The North Carolina Experiment Station is a department of the College, and its close association with the School of Agriculture gives exceptional opportunities to the Agricultural students for instruction and observation covering experiments and research in agronomy, chemistry, horticulture, vegetable pathology, plant disease, bacteriology, dairy and animal husbandry, poultry husbandry, veterinary science, and entomology.

AGRONOMY.

Subjects of Instruction.

1. **Agriculture.**—Elementary and popular lectures introductory to the subject of Agriculture in its broad sense. The simpler properties of soils; tillage, fertilizers, conservation of fertility; seed selection; crops of North Carolina, rotation, etc., will be briefly considered by lecture and practical demonstration in the laboratory and in the field. Three periods, first term. Required of Freshmen. Professor NEWMAN.

2. **Farm Equipment.**—Lectures and recitations upon selecting, planning, and equipping farms; locating, planning and erecting farm buildings; tools and miscellaneous appliances; farm power; fences, gates and bridges; farm roads. Two periods, second and third terms. Required of Juniors. Professor NEWMAN.

3. **Farm Crops.**—Recitations and lectures upon the history, production, uses and marketing of farm crops. Exercises in the field and laboratory covering tillage, fertilization, seed selection, storage, and rotation. Weeds and their eradication. A portion of the College farm is devoted to the growing of a variety of crops for instructional purposes, and each student is required to keep records of each crop, covering the preparation of the soil, time of planting, quantities of seed per acre, mixing, quantities and composition of fertilizers used, and the methods and times of application. Two periods, first, second and third terms. Required of Juniors. Professor NEWMAN.

4. **Special Crops.**—This course embraces advanced work in farm crops, and is a continuation of the Junior work, but is more specialized and technical. Cotton, corn, small grain, and the principal legumes are studied in detail, as well as such other crops as time will permit. Attention is given to rotations and the conservation and development of fertility in connection with the use on the farm or the sale of the various crops. The principles of breeding as applied to cotton, corn, and cowpeas are demonstrated on the farm in order that the student may become familiar with the practical details of such work. Each student is required to present a monograph on some crop or some subject of close relationship to important crops of the State. Three periods throughout the year. For Seniors. Professor NEWMAN.

5. **Farm Management.**—Comparisons of types of farming and their relation to climate and soil; labor, transportation and population; capital and land value; operating expenses; systems of land tenure;

farm organization; size of farms; location and arrangement of buildings, roadways, fences, water supply, orchard, garden, etc. Factors governing nature and amount of equipment; financial accounts; farm records; diversification, rotation from business point of view; cropping systems; relationship of animal and plant production; maintenance of fertility; standard of living; schools; churches. Two periods, second and third terms. Required of Seniors. Professor NEWMAN.

SOILS.

10. **Soils.**—Attention is given to the forces that decompose and disintegrate rock and to the influence of these forces and of the various kinds of rock on the resulting soil. The physical characters such as water-holding capacity, capillarity, drainage, effect of mulches, temperature and weight, and the modification of these characters by tillage, cropping, and all operations of practical soil management, are discussed and exemplified in the class room, laboratory, and field. Some attention is given to the classification of soils in the United States and especially in North Carolina. The physical, chemical and bacteriological soil conditions are discussed in relation to each other and to their effects on soil fertility. Systems of maintaining the permanent productiveness of soils are studied. Three periods throughout the year. Required of Juniors. Prerequisite, Chemistry 90, and Physics 100. Associate Professor SHERWIN.

11. **Fertilizers.**—Sources, composition, availability and value of various commercial and farm fertilizers. Comparative value of the elements of plant food in different carriers as shown by their productive capacity. Fertilization of all the principal crops of the State and of any special crops in which the class is interested will be discussed, considering amount, method, and time of application as well as the most economical formula to use. Two periods, fall term. Required of Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

12. **Farm Drainage.**—This includes both principles and practice of drainage. The student becomes familiar with the use of various drainage instruments and implements, as the course involves considerable field work in laying out systems of under-drains. Different methods of leveling and determining grade are discussed and practiced.

Determination of size of tile needed, depth and method of laying, influence of depth of tile and distance apart of drains on withdrawal of water from the soil, and all of these as influenced by texture and character of the soil, are considered. Drainage by means of open ditches and surface drainage by means of terraces will also be given attention. Three periods a week, second term. Required of Seniors in

Agronomy. Elective for all other Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

13. Advanced Soils.—In this course the student will be guided in the study of any line of Soils work he may choose, either along practical or scientific lines. Laboratory work will be given. Considerable reference will be made to experiment station literature with the aim of acquainting the student with the literature on the subject and with the methods of investigation used. As this is advanced work, suited to the several needs of different students, the class will not necessarily meet together, but hours will be arranged for each student electing the work. Three periods a week throughout the year. Elective for Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

HORTICULTURE.

Equipment.

The Horticultural Department occupies rooms in the Agricultural Building, including class rooms, laboratory, and vegetable and fruit cold-storage rooms. It also has a large laboratory connected with the greenhouses. The laboratories are used for such work as seed selection, bud studies, propagation work, budding, grafting, transplanting, study of varieties of fruits, nuts, and vegetable seeds.

The greenhouses consist of three glass structures heated by hot water. They are used for the growing of ornamentals, vegetables, and important exotic plants; and considerable laboratory work is also carried on in these houses. The student learns the use, importance, and culture of these plants. Many of them are also used to illustrate interesting and instructive characteristics of plant life.

The department is well supplied with apparatus for laboratory work, such as budding knives, grafting tools, pruning shears and saws, spray pumps, seed drills, and wheel hoes.

The Department has an extensive orchard containing the most important varieties of North Carolina fruits, including the apple, pear, plum, peach, cherry, persimmon, apricot, fig, pecan, quince, and raspberry; two complete vineyards containing the leading standard varieties of the Labrusca, Rotundifolia, and Æstivalis species, together with a large number of promising new hybrids; and a nursery which is devoted to the growing of seedling trees and the practices of plant propagation such as budding, and grafting.

The department has charge of ten acres of land, which is devoted entirely to the raising of vegetables. These grounds are used for demonstration purposes in vegetable gardening, illustrating the principles and methods used in modern trucking and market gardening industries of the State.

The College campus is used in teaching ornamental gardening and for a study of economic trees and shrubs. The experimental orchards are freely used for illustrative purposes.

Laboratory work accompanies every subject, always supplementing the class work given at the same time.

Subjects of Instruction.

20. **Vegetable Gardening and Plant Propagation.**—This course deals with the selection and preparation of soils for vegetables; fertilizers and manures; handling of seeds, planting, and transplanting; constructing of hot beds and cold frames; and culture, harvesting and storing of all important vegetables. Special stress is laid on the home garden and the trucking industry of this State. The work in plant propagation includes such work as layering, cuttings, grafting, and budding. Four periods, second term; one period, third term. Required of Sophomores. Mr. CRIDER.

21. **Fruit Culture.**—A course treating of the location of orchards, soils for fruits, and varieties, planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. The laboratory work will include a study of species and varieties of fruits and nuts, fruit buds, and exercises in pruning trees, shrubs, and vines. Four periods, first and second term. Required of Juniors in the Agricultural, Horticultural and Normal divisions. Professor REIMER.

22. **Landscape Gardening.**—This course deals with the planning, arrangement, and care of home grounds, parks, and cemeteries. Special stress is laid on home grounds. It treats especially of lawns, trees, and shrubs, flowers and flower beds, and the arrangement and grouping of these. The campus, city parks, and many beautiful home grounds give exceptional opportunities for this. Four periods, third term. Required of Juniors in the Agricultural, Horticultural and Normal divisions. Professor REIMER.

23. **Plant Breeding.**—A course dealing with the fundamental laws and principles of plant breeding, such as variation, mutations, heredity, Mendel's law; and crossing, selection, origination, and improvement of varieties. Three periods, first term. Required of all Seniors in the Horticultural and Agronomy divisions. Professor REIMER.

24. **Marketing.**—An advanced course dealing with the harvesting, grading, packing, storing, transporting, and selling of fruits and vegetables. Two periods, first term. Required of Seniors in the Horticultural Division.

25. Pomology.—An advanced course dealing with the origin and development, adaptation, and improvement and breeding of fruits. Five periods, second term. Required of Seniors in the Horticultural Division. Professor REIMER.

26. Horticulture.—During the last term each student will take up some special phase of horticultural work that he expects to give special attention to after leaving college. Each student will be dealt with individually. He will be required to make a thorough study of the latest Experiment Station work on his particular subject. Five periods, third term. Required of Seniors in the Horticultural Division. Professor REIMER.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors, and a store-room, a dark-room, and an incubator-room. All rooms are supplied with electricity, gas, and hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fire-proof, and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted, and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material, for seed-testing and for conducting experiments in plant physiology and pathology.

30. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of Freshmen. Professor STEVENS and Mr. NORTON.

31. **Systematic Botany.**—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Sophomores. Mr. NORTON.

32. **Plant Diseases.**—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease, and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Professor STEVENS.

33. **Plant Diseases (Advanced).**—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. Elective for Seniors. Professor STEVENS.

34. **Bacteriology.**—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, and disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor STEVENS and Mr. NORTON.

35. **Bacteriology (Advanced).**—A course designed to perfect the technique in bacteriology for those who desire to do original work in this subject. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, or in bacteriology of manure, water, soil, or air. The course is flexible, and will be made to fit the requirements of those students electing it. Three periods. For Seniors. Professor STEVENS and Mr. NORTON.

36. **Dairy Bacteriology.**—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. The laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market, and in making and using starters in butter and cheese-making. Three periods, second term. For Seniors. Mr. NORTON.

ANIMAL HUSBANDRY.

Equipment.—The Animal Husbandry Department occupies rooms in the Agricultural Building including office, class rooms, and a large judging room in the east end of the basement. The Department has a few complete sets of Herd, Flock, and Stud books, and is completing new sets as fast as they can be secured. These are used in pedigree work. The live stock at the present time consists of a dairy herd of sixty-five head made up of grade Jerseys, pure bred Jerseys, and Holsteins. These are used in judging work in the stock-judging courses. The product of the dairy is sold as milk and cream to the College Mess Hall and to city customers.

40. **Breeds of Live Stock.**—A study of the origin, history, characteristics, adaptability, and popularity of the breeds of live stock. Every opportunity will be taken advantage of to teach the student the merits of the various breeds, and when possible, classes of the breeds will be judged. Three periods per week, second and third terms. Required of Freshmen. Professor McNutt and Mr. Turner.

41. **Animal Breeding.**—A study of the fundamental laws and principles underlying the science of breeding, and the application of these laws in breeding the different species of domestic animals. Three periods per week, second term. Required of Juniors. Professor McNutt.

42. **Stock Feeding.**—A study of the composition of feeds and the food requirements of the domestic animals. The student will be required to become familiar with the fundamental principles so that he can compound suitable rations for the different classes of live stock. Especial emphasis will be laid upon practical problems in feeding. Three periods per week, first term. Required of Juniors. Text-book, Henry's *Feeds and Feeding*. Professor McNutt.

43. **Live Stock Judging.**—A study of the score card and its use. A comparison of the score cards for the various breeds, and practical scoring. Methods and rules in judging the various classes of live stock. In practical judging the student will be required to give oral or written reasons to sustain his placing of the animals. Three periods per week, third term. Required of Juniors. Professor McNutt.

44. **Live Stock Management.**—A study of the rules and regulations governing the importation of live stock into the United States, and the shipment of same in the United States. The feeding, care, and management of breeding and work stock, as well as fattening stock. Lecture course. Three hours per week throughout the year. Required of Seniors. Professor McNutt.

45. **Advanced Animal Breeding.**—A study of the Flock, Herd, and Stud books, and the rules governing registration as laid down by the different Breed Associations. Pedigree work will be included to give the student a clear idea of the leading families and prominent individuals. Three periods per week, first term. Required of Seniors. Professor McNutt.

46. **Advanced Stock Feeding.**—Continuation of Course 42, with espe-

cial emphasis laid upon practical feeding. The experimental work on feeding that has been done by the various experiment stations will be reviewed to give the student a clear conception of the importance and value of such work. Three periods each week, second term. Required of Seniors. Professor McNutt.

47. **Market Classes and Grades of Meat.**—A study of the market classes and grades of beef cattle, sheep and swine; also slaughtering, marketing, and meat cutting. The relative value of the cuts from the various parts of the carcass will be given due consideration. Three periods each week, third term. Required of Seniors. Professor McNutt.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space in the basement of the new Agricultural Building, besides the locker-rooms and the toilet and bath rooms on the same floor and the dairy lecture room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet, and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of De Laval, Sharples, Empire, National, United States, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats, hand and power butter-workers, aerators and coolers, milk-testers, and other articles useful in doing farm dairy work.

Milk-testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and the lactometer is also used.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle-washing and sterilizing outfit.

Subjects of Instruction.

48. **Dairying.**—Text-book and lecture course covering the fundamental principles of modern dairying. The laboratory work consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction, care, and operation of the leading makes of cream separators. Proficiency is required of the

student in testing and standardizing milk and cream, and in cream-ripening, churning, working, packing, and scoring butter. Four periods each week, first term. Required of Sophomores. Mr. TURNER.

49. **Advanced Dairying.**—A study of the pratical problems in successful dairy management. Dairy-barn construction, and arrangement of buildings and lots. Advanced work in butter-making, ice-cream-making, testing for adulterants and preservatives, butter-scoring, and moisture tests of butter. The production of sanitary and certified milk will also be studied with practice work in scoring dairy barns. Three periods, first term. For Seniors. Mr. TURNER.

POULTRY HUSBANDRY.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina; an incubator cellar with several different makes of incubators; and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, and with grist and bone mills.

The following varieties of poultry are kept: Barred, Buff, and White Plymouth Rock; White and Columbian Wyandotte; Single-comb Rhode Island Red; White and Brown Leghorn; Buff and White Orpington, and Black Minorca.

50. **Poultry Husbandry.**—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. For Sophomores. Assistant Professor JEFFREY, Mr. TAYLOR.

51. **Poultry Husbandry.**—Theory and practice of judging fowls by score-card and comparison; comparisons of different systems of poultry keeping; artificial incubation and brooding. Three periods, third term. For Seniors.

VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

Equipment.—For instruction in the above subjects, the Department is provided with offices, lecture rooms, laboratories, pharmacy room (for drugs and surgical instruments), and dissecting room.

The offices contain the usual office fixtures, besides a library of most of the standard works on veterinary medicine in English.

For use in class room and laboratory, the department is supplied with mounted skeletons of man, of horse, and of cow; also numerous specimens of tumors, tuberculous organs, bony lesions of spavins, splints, ring bones, and side bones. Besides the collection illustrating diseased tissues, the Department has a large collection of parasites which infest domestic animals.

The laboratories are provided with wall cases, work tables and desks, washing sinks, hot and cold water, gas burners, and electric lights. The laboratory for special work has microtome (for cutting sections of tissues for study with microscope), glass slides, stains, and the various materials required for making temporary and permanent mounts of healthy and diseased tissues. The larger laboratory is supplied with the necessary equipment for conducting exercises in physiology.

In the pharmacy room are samples of a large number of drugs used in comparative medicine, and a more or less complete set of surgical instruments, including an operating table for small animals, and casting harness and slings for larger animals.

60. **Animal Physiology.**—This subject during the Freshman year will include the study of the structures of the body and of the composition of foods. In the Sophomore year it will include a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, demonstrations, and laboratory exercises. Two periods, second and third terms, required of Freshmen. Two periods, first term, required of Sophomores. Professor Roberts and Dr. Cecil.

61. **Veterinary Medicine.**—(a) **Veterinary Anatomy.**—Text-book, supplemented by lectures and illustrated by charts, models, skeletons, sketches, and dissections. Anatomy being a fundamental subject in any system of medicine, and essential to a thorough knowledge of live stock, the first term will be largely devoted to this study, special attention being given to the organs of digestion and locomotion, and such other parts as are of interest to the stock farmer. One period each week will be devoted to a clinic. Four periods first term. Required of Juniors in Animal Husbandry Division. Professor Roberts and Doctor Koonce.

(b) **Veterinary Medicine.**—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. Four periods, second term. Required of Juniors in Animal Husbandry Division. Professor Roberts and Dr. Koonce.

(c) **Veterinary Practice.**—Lectures on the most common diseases and injuries of domestic animals, with appropriate treatment for the same. When practicable, these lectures will be illustrated by clinics, which will enable the student to become more familiar with the different diseases and to perform minor surgical operations under the direction of the instructor. Four periods, third term. Required of Juniors in Animal Husbandry Division. Professor ROBERTS and Doctor KOONCE.

62. **Veterinary Medicine.**—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection, and also to diseases attendant upon breeding animals. Three periods. Required of Seniors in Animal Husbandry Division. Professor ROBERTS.

63. **Histology.**—A microscopical study of the tissues of the body, treating of the cell as the unit of structure, and of its functions; also of tissues, their classification, and their relation to the structure of organs. From dissections, clinics, and proximity to slaughter-houses, abundance of histological material of various animals is received. Three periods. Elective for Seniors. Professor ROBERTS and Doctor CECIL.

For agricultural students intending to pursue a veterinary course, opportunity will be given during their Junior and Senior years to elect subjects required in such a course.

64. **Veterinary Anatomy.**—This subject will deal with the study of the skeleton, including bones and joints, and of muscles and digestive organs. A complete dissection of the muscles of the horse will be made. Three periods. Required of Juniors in Veterinary Division. Doctor KOONCE.

65. **Histology.**—Same as course 63. Three periods. Required of Juniors in Veterinary Division. Professor ROBERTS and Doctor CECIL.

66. **Language of Medicine.**—In order that the student may become familiar with medical terms, this course includes a study of the formation of words used in medical literature. One period. Required of Juniors in Veterinary Division. Doctor CECIL.

67. **Clinics.**—An essential part of the training of students in comparative medicine consists in seeing for himself animals suffering with the various diseases discussed in class room. To this end abundant clinic material is available in the veterinary hospitals in Raleigh. Three periods. Required of Juniors in the Veterinary Division. Doctors ROBERTS, KOONCE and CECIL.

68. **Veterinary Anatomy.**—A continuation of course 64. A study of the respiratory, circulatory, and nervous systems will be made, with complete dissection of each in the horse. Three periods. Required of Seniors in the Veterinary Division. Doctor KOONCE.

69. **Veterinary Physiology.**—A comparative study of the bodily functions of the various domestic animals is made, with special reference to digestion, respiration, circulation, and secretion. Two periods. Required of Seniors in the Veterinary Division. Elective in all other Senior courses. Professor ROBERTS and Doctor CECIL.

70. **Pathology.**—A large number of specimens of diseased tissue already present in the museum and opportunity for collecting others from clinics and abattoirs insure plenty of material to demonstrate the various macroscopical and microscopical changes in organs and tissues due to disease. Three periods. Required of Seniors in the Veterinary Division. Professor ROBERTS and Doctor CECIL.

71. **Materia Medica.**—A study of the drugs used in comparative medicine will consist of their classification, composition, physiological actions, and doses. Three periods, first term. Required of Seniors in the Veterinary Division. Professor ROBERTS.

72. **Clinical Diagnosis.**—This subject is taught for the purpose of studying the methods for the examination of animals to detect and diagnose the various diseases affecting them. Three periods, second and third terms. Required of Seniors in Veterinary Division. Professor ROBERTS.

73. **Clinics.**—These will be given, as in the year previous, and will give the student opportunity of putting into practice the information he has gained from study of clinical diagnosis. Three periods. Required of Seniors in Veterinary Division. Doctors ROBERTS, KOONCE and CECIL.

ZOOLOGY.

80. **Zoology.**—An elementary study of all forms of animal life—regarding their general structure and classification, with particular reference to type examples of the principal groups of some economic importance—is given by text-book, laboratory work, and supplementary lectures. The first term's work is devoted to invertebrates, but with only a brief study of the true insects. The second term covers vertebrate animals. This course is planned to give the student a general knowledge of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Required of Sophomores. Assistant Professor SMITH.

ENTOMOLOGY.

81. **Economic Entomology.**—Elements of insect structure and classification. Injurious insects and remedies: (a) of orchards; (b) of small fruits; (c) of truck and garden crops; (d) of cotton, corn, tobacco, grains, and grasses; (e) of forest, shade, and ornamental plants; (f) of barn, mill, and household. Lectures and demonstrations. Two periods, third term, required of Sophomores; and two periods, first term, required of Juniors. Assistant Professor SMITH.

82. **Systematic Entomology.**—Systematic study of orders and families of insects, with special reference to structure, classification, life-history, and habits. Lecture and laboratory practice. Two periods, three terms. For Seniors. Required in Horticultural Division, elective in other divisions. Assistant Professor SMITH.

CHEMISTRY.

90. **Inorganic Chemistry.**—Brownlee's *First Principles of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Laboratory work accompanies the class room work. Three periods. Required of Freshmen. Professor WITHERS, Doctor WILLIAMS, and Mr. PATE.

92. **Agricultural Chemistry.**—A study of plant and animal bodies and their products with reference to their composition and the changes in them. Two periods. Required of Juniors. Professor WITHERS.

93. **Chemistry-Elective.**—During the Senior year, the student may elect some work in the Chemistry Department from the following subjects: Organic Chemistry, Physiological Chemistry, Qualitative Analysis, Quantitative Analysis. These subjects are described more in detail under the courses in Chemistry beginning with No. 300.

94. **Organic Chemistry.**—Lectures and laboratory work. Moore's *Outlines of Organic Chemistry.* Three periods. Required of Sophomores. Professor WITHERS.

PHYSICS.*

100. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to the study of light. Two periods. Required of Sophomores. Mr. LATANÉ.

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*For full information see course in Electrical Engineering.

MATHEMATICS.

110. **Algebra.**—Wells's *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite for first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent, on the work of the first term. Professor YATES, Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

111. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry.* A complete course in plane geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

ENGLISH.

120. **Composition and Rhethoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

121. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

122. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

123. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writ-

ing of several papers by each member of the class, and practice in delivery, complete the work. Three periods, third term. Required of Juniors. Professor HARRISON.

124. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Two periods. Elective for Seniors. Professor HARRISON.

125. **Economics.**—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Open to Seniors. Doctor SUMMEY.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, by frequent repetitions, and by a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

130. **German.**—Worman's *Modern Languages,* first and second German books; *Studien und Plauderein,* first and second books; Fischer's *Practical Lessons in German; Practical German Grammar,* by Calvin Thomas; *German Reader,* by Fischer; and a scientific reader. Three periods. Elective for Juniors and Seniors. Doctor RUDY.

131. **French.**—Worman's *Modern Languages,* first and second French books; Worman's *Grammaire Francaise;* selected short stories from French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor RUDY.

132. **Spanish.**—Worman's *Modern Languages,* first and second Spanish books; *Introduccion a la Lengua Castellana,* by Marion y Des Garrenes; a Spanish Grammar to be selected; Fontaine's *Flores de Espana,* and other short stories from Spanish literature; *Modelos para Cartas.* Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor RUDY.

SHOP AND DRAWING.

140. **Wood Shop.**—The use and care of ordinary wood-working and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. Required of Sophomores, second term, two periods per week. Mr. CLAY.

141. **Forge Shop.**—This course is designed to teach the use of the ordinary blacksmith's tools, and the making of the more common forgings, such as chains, hooks, etc. Required of Sophomores, third term, two periods per week. Mr. WHEELER.

142. **Drawing.**—Elementary drawing, elementary projection, freehand sketching and lettering. Geometrical problems. Freehand drawing. Two periods, first term. Required of Freshmen. Mr. SELBY.

MILITARY SCIENCE.

150. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three periods, first and second

terms; two periods, third term. Required of all classes except Seniors. Seniors are either to take drill or three extra hours in some other subject instead. Commandant PEACE and Officers of the Battalion.

151. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Sophomores. Lieutenant YOUNG.

AGRICULTURAL EXTENSION.

The Department of Agricultural Extension was organized July 1, 1909. The object of this department is to link the scientific agricultural work of the College and Station to the practical work on the farms of the State. Each year the trained scientific workers of America add to the fund of information needed by progressive farmers. The object of this department is to carry this information to the busy men on the farm, and to help in the teaching of farm science in our schools. This is done by addresses to farmers, by farm schools held in different sections, holding seed corn days, organizing boys' corn clubs, and in such other ways as time and occasion may permit. Professor I. O. SCHAUB.

Engineering Courses.

Four-year Courses in

II. Civil Engineering.
III. Mechanical Engineering.
IV. Electrical Engineering.
V. Chemistry.

Course in Civil Engineering.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind—one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of Applied Mathematics which are involved in the solution of engineering problems.

The aim has been to make this preëminently a technical course; but subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 230†	2	2	2
Wood-work, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2

Sophomore Year.

Architecture, 220	2	--	--
Architectural Drawing, 221	2	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Descriptive Geometry, 200	--	2	2
Electricity and Magnetism, 281	2	2	2
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
American Literature, 361	3	3	3
Military Drill, 390	3	3	2
Military Tactics, 391	1	1	1

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*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Road Building, 211	1	1	1
Surveying, 202 and 205	2	2	2
Surveying (field work), 206	2	2	2
Construction, 204	2	--	--
Descriptive Geometry, 200	2	2	2
Graphic Statics, 201	--	2	2
Mechanics, 203	3	3	3
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
English, 362, 363	3	3	3
Military Drill, 390	3	3	2
Spanish (elective), 372	3	3	3

Senior Year.

Mechanics of Materials, 214	3	--	--
Roofs and Bridges, 208	3	--	--
Bridge Design, 209	--	3	3
Municipal Engineering, 210	--	2	2
Surveying (field work), 207	2	--	--
Hydraulics, 215	--	3	3
Calculus, 346	3	--	--
Railroad Engineering, 205	3	3	3
Reinforced Concrete, 213	--	3	3
Astronomy, 212	--	2	2
Mechanics, 203	2	--	--
English Literature, 364	2	2	2
Economics, 380	1	1	1
Elect one of the following:			
Military Drill, 390	3	3	2
Modern Languages, 370, 372	3	3	3

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work.

SUBJECTS OF INSTRUCTION.

200. **Descriptive Geometry, Stereotomy, Topographical Drawing.**—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Three periods. Required of Juniors in Civil Engineering. Mr. POOLE.

201. **Graphic Statics.**—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil Engineering. Assistant Professor MANN.

202. **Surveying.**—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying.* Two periods, first term. Required of Juniors in Civil Engineering. Assistant Professor MANN.

203. **Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil Engineering. Two periods, first term. Required of Seniors. Assistant Professor MANN.

204. **Construction.**—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction.* Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Assistant Professor MANN.

205. **Railroad Engineering.**—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering.* Two periods, second and third terms. Required of Juniors in Civil Engineering. Three periods. Required of Seniors in Civil Engineering. Assistant Professor MANN.

206. **Surveying.**—Field work. Use of instruments, compass level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil Engineering. Assistant Professor MANN, Mr. POOLE, and Mr. TUCKER.

207. **Surveying.**—Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term. Required of Seniors in Civil Engineering. Assistant Professor Mann, Mr. Poole, Mr. Tucker.

208. **Roofs and Bridges.**—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges.* Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Mr. Poole.

209. **Bridge Design.**—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel highway bridge. Three periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

210. **Municipal Engineering.**—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

211. **Road Building.**—Text-book on construction of roads, streets and pavements. Lectures on practical roadmaking in North Carolina. One period. Required of Juniors in Civil Engineering. Professor Riddick.

212. **Astronomy.**—Determination of azimuth, latitude and longitude, and time. Comstock's *Astronomy for Civil Engineers.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

213. **Reinforced Concrete.**—Turneaure & Maurer's *General Theory of Concrete and Steel Construction.* Problems in beams, columns, retaining walls, etc. Three periods, second and third terms. Required of Seniors in Civil Engineering. Assistant Professor Mann.

214. **Mechanics of Materials.**—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil Engineering. Professor Riddick.

215. **Hydraulics.**—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book, Merriman's *Hydraulics.* Three periods, second and third terms. Required of Seniors in Civil Engineering. Two periods, second and third terms. Required of Seniors in Mechanical and Electrical Engineering. Professor Riddick.

ARCHITECTURE.

220. **Architecture.**—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of

buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

221. **Architectural Drawing.**—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Assistant Professor MANN and Mr. POOLE.

Four-Year Course in Mechanical Engineering.

The regular four-year course in Mechanical Engineering is intended to train men in the fundamental principles which underlie all mechanical engineering, and to give such practice in engineering work as it may be possible to give in a technical school.

Upon the completion of the course the man is fitted to enter upon any particular branch of the varied activities which are the especial province of the mechanical engineer.

In general these activities embrace the design, construction, manufacture, operation, management and general efficiency of power plants; all problems of power generation and power transmission, wherein a knowledge of boilers, of engines, of steam and water turbines, and of all accompanying auxiliaries, is necessary; all questions involving heating and ventilation; all questions having to do with ice-making and refrigeration; all questions concerned with hydraulic motors, and with machinery for the water supply of cities; all mechanical operations and processes involved in mining, either coal or ore, and in ore-reduction; all mechanical processes and operations involved in the manufacture of all mill products—steel, wood, cotton, wool, leather, etc.; all commercial work having to do with shops, foundries and factories. The motive power and the mechanical equipment of railroads, together with the design and construction of rolling stock, and the problems of marine engineering, including the design and construction of mechanical equipment for steamships, offer a special field to those trained in Mechanical Engineering.

By no means least of the functions of a mechanical engineer is the part he plays in the industrial world as an organizer, a systematizer and a cost reducer.

To success in any one of these particular branches or phases of this profession a thorough technical training is absolutely indispensable, for it supplies the broad, general foundation, which must in its turn be supplemented by practical experience and by contact with the special line of work chosen.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 230	2	2	2
Wood-work, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geomtry, 341	--	2	5
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	3

Sophomore Year.

Descriptive Geometry, 231	2	--	--
Mechanical Drawing, 232	--	2	2
Foundry, 237	2	--	--
Pattern-making, 238	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Electricity and Magnetism, 281	2	2	2
Physical Laboratory, 283	1	1	1
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
American Literature, 361	3	3	3
Military Drill, 390	3	3	2
Military Tactics, 391	1	1	1

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engines and Boilers, 241	4	2	2
Mechanics, 250	--	3	3
Machine Design, 233	3	2	2
Machine-shop, 239	2	2	2
Electrical Engineering, 285	2	2	2
Electrical Laboratory, 290	1	1	1
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
English, 362, 363	3	3	3
Military Drill, 390	3	3	2
German (elective), 370	3	3	3

Senior Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Applied Mechanics, 251	3	2	2
Machine Design, 234	3	2	2
Machine-shop work, 240	2	2	2
Power Plants, 243	3	3	--
Gas Engines, 244	3	--	--
Industrial Engineering, 245	--	2	--
Power Transmission, 242	--	--	2
Heating, Ventiliation and Refrigeration, 247	--	2	3
Power Plant Design, 248	--	2	2
Surveying, 246	--	--	2
Steam Engineering Laboratory, 249	2	2	2
Calculus, 346	3	--	--
Hydraulics, 215	--	2	2
Elect 3 periods of the following:			
Military Drill, 390	3	3	2
Modern Languages, 370, 371, 372	3	3	3
English, 364	2	2	2
Economics, 380	1	1	1

MECHANICAL ENGINEERING EQUIPMENT.

Buildings.—The drawing rooms, recitation rooms, the forge shop, wood shop, machine shop, and mechanical laboratory are in the Mechanical Building. The Power Plant is also utilized for experimental engineering. The building formerly used as a boiler plant is now used as a foundry.

Drawing Rooms.—There are two of these, one accommodating the Freshmen, the other those in the higher classes. These are equipped with drawing tables, board and filing cabinets, models of valves, pumps, machine parts, etc., etc. They are well lighted, heated. and ventilated, and are well adapted to the work.

Forge Shop.—This well-lighted and ventilated room is thirty by forty feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system operated by a 60-inch Sturtevant exhaust fan. for removing smoke and gases from the fires; anvils and all necessary hand tools.

Wood Shop.—The wood-working equipment consists of fifteen double carpenters' benches which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 34-inch band saw; a jig-saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain mortiser; a dovetailing machine; a 38-inch grindstone; a wood trimmer; an adjustable miter box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

Machine Shop.—This contains a 16-inch Davis & Egan lathe with 10-foot bed, a 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Champion lathe with 6-foot bed, a 14-inch Flather lathe with a 6-foot bed, three 14-inch lathes with 6-foot beds (built in College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a Brown & Sharpe universal milling machine with all attachments. a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a Greenwich arbor press, an electric center grinder, a Whiton centering machine, and a twist drill grinder. The machines have full equipment of chucks, rests and tools. The benches are well provided with vises.

Foundry.—This will accommodate about thirty students at one time. The floor is 30 by 60 feet, and the equipment consists of a Northern Engineering Works 36-inch cupola, with blast furnished by a Buffalo blower, a Griffen oil-burning furnace with air furnished by a No. 0 Sturtevant high-pressure blower, and oil by a Goulds triplex pump. There is also a crucible brass furnace of good size. For moulding machines the foundry is equipped with an Arcade squeezer and a Model moulding machine, both made by the Arcade Manufacturing Company, and a Pridmore moulding machine made by Henry Pridmore. A Cadet core oven and all necessary tools for bench and floor work complete the equipment.

Laboratory.—The department is provided with the necessary apparatus for making boiler and engine tests and for other work of an experimental character.

For the work in steam engineering there are the following: a forty-horse-power Skinner automatic engine, to which is connected a Wheeler surface condenser with a Blake air pump, a ten-horse-power engine, a twenty-five-horse-power Stearns engine, a two-horse-power engine, an injector testing apparatus, an apparatus for testing indicator springs and steam gages, an apparatus for flue gas analysis, and an Emerson Fuel Calorimeter for testing coal and fuel oils. Besides these, which are used only for experimental purposes, the Power Plant with a one-hundred-horse-power Skinner automatic steam engine, a hundred and thirty-five-horse-power DeLaval steam turbine, with all auxiliaries, as well as the boiler equipment—consisting of two two-hundred-horse-power Atlas, and two seventy-five-horse-power Babcock & Wilcox water tube boilers—are all available for tests.

For general laboratory work there are two small gasoline engines, oil testing machines of various kinds, water meters, centrifugal water pumps, steam-engine indicators, planimeters, slide rules, thermometers, calorimeters, gages, a Crosby gage tester, three hydraulic rams, a 50,000-pound Riehle automatic testing machine arranged for tensional, compression and transverse testing, a 15,000-pound Olsen testing machine for small specimens, and other apparatus for various experiments. The power for all the shops is furnished by electric motors.

SUBJECTS OF INSTRUCTION.

230. Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of descriptive geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Two periods. Required of Freshmen and first year Short Course men. Mr. SELBY.

Note.—Each student will be required to furnish, at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale practically at cost the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit $10.00:

Drawing board, 22 by 32 inches.
T-square, 30 inches.
60° triangle, 9 inches, transparent.
45° triangle, 7 inches, transparent.
12″ triangular architect's scale.
4 H pencil. H or F pencil.
Erasers for ink and pencil.
Penholder with fine points.
Pencil sharpener.

Instrument set consisting of:
6-inch compass with pen, pencil and lengthening bar.
5 1-2-inch dividers with hair-spring adjustment.
3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
5 1-2-inch ruling pen, 4 1-2-inch ruling pen.

231. **Descriptive Geometry.**—General definitions; third angle; representation of points, lines and planes; profile plane; projected views; line and plane essentials; relations of points, lines and planes in space; intersection of lines and planes; curved surfaces; development of surfaces; plane sections of solids. During the term many practical problems are given for solution and construction. Two periods. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Professor SATTERFIELD and Mr. MORRIS.

232. **Mechanical Drawing.**—Working sketches and drawings of machine parts from the model. Tracing and blueprinting. Elementary machine design. Cam design. Two periods. Second and third terms. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Mr. MORRIS.

233. **Machine Design.**—A study of the materials used in machine construction; analysis of the stresses in machine parts; design of machine parts considering them as compression, tension, or torsion members; modification of the above parts to suit practice and for the sake of general appearance. Design of gears, shafting, bearings and supports.

Design of simple machines such as shears, punches, air hoists, riveters, etc. One lecture and two drawing periods per week for the first term, two drawing periods in second and third terms. Required of Juniors in Mechanical and Electrical Engineering. Prerequisite, Descriptive Geometry and Mechanical Drawing 230 and 232. Assistant Professor ELLIS.

234. **Machine Design.**—Estimating, checking of working drawings, original design. Calculations and working drawings of types of steam engines, gas engines, gas producers, condensers, etc. Three periods, first term; two periods, second and third terms. Required of Seniors in Mechanical Engineering. Assistant Professor ELLIS.

235. **Wood-work.**—The use and care of the ordinary wood-working bench tools. Exercises in laying out and working from drawings, sawing, planing, and making of joints. The use and care of wood-working machines such as saws, planers, shapers, dovetailers, tenoners, etc. Exercises in wood-turning. Work on repairs about the College. Two periods. Required of Freshmen and first year Short Course. Mr. CLAY.

236. **Forge-work.**—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer. Special work on equipment and repairs about the College. Required of Freshmen and first year Short Course. Two periods, recitations and exercises, first and second terms. Mr. WHEELER.

237. **Foundry.**—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of Freshmen. Two periods, third term. Sophomores in Mechanical and Electrical Engineering and second year Short Course. Two periods, first term. Mr. PARK and Mr. WHEELER.

238. **Pattern-making.**—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting; the making of special patterns; cores and core-boxes; introducing draft, shrinkage, finish, and the appliances and usages of modern pattern work. Required of Sophomores in Mechanical and Electrical Engineering. Two periods, second and third terms. Prerequisite, Wood-work, 235. Mr. CLAY and Mr. MORRIS.

239. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling and shaper work. Two periods. Required of Juniors in Mechanical Engineering. Two periods, first term; one period, second and third terms. Required of Juniors in Electrical Engineering. Mr. PARK.

240. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Two periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

241. Heat Engines.—A study of elementary thermodynamics, properties of steam calorimeters, combustion and fuels, boilers and boiler auxiliaries, steam engines—including types and details, valve gears, governors, compound engines, and testing-condensers, air pumps, steam turbines, gas engines, economy of heat engines. Four periods during first term; two periods during second and third terms. Required of Juniors in Mechanical Engineering. Two periods throughout the year. Required of Juniors in Electrical and Textile Engineering. Professor SATTERFIELD.

242. Transmission of Power.—This work includes a study of the methods employed for the transmission and measurement of power in machine shops and factories, and review of experiments which have been made to determine the efficiency of the various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

243. Mechanical Engineering of Power Plants.—A critical study of steam boilers and furnaces, of boiler room accessories, of coal and ash handling, and of piping, steam engines, steam turbines, pumps, condensers, traps, separators, etc. Special attention is paid to the conditions under which different equipment would be used, and to the selection of the apparatus, also to the cost of power, depreciation, repairs, etc. Three periods, first and second terms. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

244. Gas Engines.—Thermodynamics of the gas engine. A study of the various cycles. Types of gas, gasoline, and oil engines. Power of gas engines. Efficiency. Gas producers. Cost of power. Gas power plants. Three periods, first term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

247. Heating, Ventilation, and Refrigeration.—This subject treats of the various methods of heating, such as by open fires, hot air, steam and hot water; of the proper ventilation of all types of buildings; of methods of utilizing the waste heat from power plants for the heating of buildings; of the various types of ice-making and refrigerating machinery, and their installation, care and management; and of the cost of heating and coaling. Two periods, second term; three periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

248. **Power Plant Design.**—A study of the selection, location, and proportioning of the essential details of steam and gas power plants, such as engines, boilers, pumps, piping, condensers, feed water heaters, chimneys, etc. The course consists of the study of references, lectures on the subject, and the drawing of plans of plants showing all details. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Assistant Professor ELLIS.

249. **Steam Engineering Laboratory.**—Practice in engine-running, valve-setting, calibration of instruments, testing gauges and lubricants. Use of indicators and calorimeters. Boiler tests; engine tests. Testing of materials. Two periods. Required of Seniors in Mechanical Engineering. One period. Required of Seniors in Electrical Engineering. Professor SATTERFIELD and Assistant Professor ELLIS, Mr. MORRIS and Mr. CLAY.

250. **Mechanics.**—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a right body, momentum and impact, work, power, friction, application of principles to various engineering problems. Preparatory to Applied Mechanics in Senior year. Three periods, second and third terms. Required of Juniors in Mechanical and Electrical Engineering. Mr. SELBY.

251. **Applied Mechanics.**—A study of the laws of equilibrium and motion as applied to a particle and to rigid bodies; analytic treatment of stresses in framed structures, center of gravity, moment of inertia, work and energy, and friction; mechanics of materials, including stresses and deformations in tension, compression, shearing, torsion, and flexure, stresses and deformation in long columns, continuous girders, arches, ribs, and reinforced concrete, and the elements of the theory of elasticity. Three periods, first term; two periods, second and third terms. Prerequisite, Mechanics 250. Required of Seniors in Mechanical and Electrical Engineering. Assistant Professor ELLIS.

253. **Machine Drawing.**—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Required of second year Short Course students. Assistant Professor ELLIS.

254. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Required of second year Short Course students. Two periods. Mr. PARK.

255. **Power Machinery.**—Descriptive study of the machinery of steam power-plant engines, boilers, condensers, pumps, steam turbines, piping,

care and management. Study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake, and boiler horse-power problems. Required of second year Short Course. Three periods. Mr. MORRIS.

245. **Industrial Engineering.**—A study of the location, arrangement, and construction of buildings for manufacturing plants; types of building, methods of lighting and heating, arrangement and installation of machinery; organization and management of departments; cost keeping, wage systems, etc., etc. Two periods, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

246. **Surveying.**—A brief course teaching the use of the level and transit in locating buildings, laying out foundations, and lining up shafting, engines, and machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Assistant Professor MANN and assistants.

Course in Electrical Engineering.

The four-year course in Electrical Engineering planned for those who wish a thorough and practical preparation for taking up this profession. Only a most thorough training in the fundamental laws and principles of electricity and magnetism will suffice as a preparation for a branch of engineering which is advancing so rapidly. This training is given by careful study of text-books and co-ordinated work in the various laboratories.

The department, as will be seen from the description of the equipment, is well supplied with dynamos, motors, and other electrical apparatus, and with testing instruments of all kinds.

PHYSICS.

A thorough training in the elements of physics is provided in a two-year course planned especially to meet the needs of engineering students. Instruction in the class room is accompanied by laboratory courses laid out so as to illustrate not only the principles taught in the former, but also to train the student to observe accurately, and to give him considerable facility in the use of scientific instruments. During the first year the subjects of mechanics, hydraulics, pneumatics, heat, and light are taken up. The second year is given to the study of electricity and magnetism, and includes outlines of the more important electrical applications.

Brief courses in physics are given for students in Agriculture, Textile Industry, and Mechanic Arts.

EQUIPMENT.

The laboratories for these courses in physics are in the basement of the Administration Building, where is also a large lecture room fitted with a lantern and facilities for giving experimental lectures. There are two laboratories, one for the first-year course in physics, and the other for electrical and magnetic measurements. These rooms are spacious and well lighted and well equipped with apparatus.

IV. The four-year course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Mechanical Drawing, 230	2	2	2
Wood-work, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2

Sophomore Year.

Electricity and Magnetism, 281	2	2	2
Physical Laboratory, 283	1	1	1
Descriptive Geometry, 231	2	--	--
Mechanical Drawing, 232	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
Foundry, 237	2	--	--
Pattern-making, 238	--	2	2
American Literature, 361	3	3	3
Military Tactics, 391	1	1	1
Military Drill, 390	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 284	3	2	2
Electrical Engineering Laboratory, 289	2	2	2
Steam Engines and Boilers, 241	2	2	2
Machine-shop work, 239	2	1	1
Machine Design, 233	3	2	2
Mechanics, 250	--	3	3
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
English, 362, 363	3	3	3
Military Drill, 390	3	3	2

Senior Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Alterating Currents, 286	3	3	3
Electrical Applications, 287	2	2	2
Electrical Transmission, 288	--	2	2
Electrical Engineering Laboratory, 291	2	2	2
Electrical Design, 292	2	2	2
Applied Mechanics, 251	3	2	2
Steam Engineering (laboratory), 249	1	1	1
Calculus, 346	3	--	--
Hydraulics, 215	--	2	2
English Literature, 364	2	2	2
Economics, 380	1	1	1
Elect one subject from the following:			
Military Drill, 390	3	3	2
Modern Languages, 370, 371, 372	3	3	3

SUBJECTS OF INSTRUCTION.

280. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound, and light. Text-book used: Milliken & Gale's *First Course in Physics*. Four periods. Required of Freshmen in Engineering courses. Mr. LATANÉ and Mr. PRITCHETT.

281. Elementary Electricity and Magnetism.—Magnetism, current electricity, electric circuits; electro-magnetism and magnetic induction; electrostatics. Text-book used: Thompson's *Elementary Lessons in Electricity and Magnetism*. Two periods. Required of Sophomores in Engineering courses. Prerequisites, Subjects 280, 340, and 341. Professor BROWNE, Assistant Professor McINTYRE, and Mr. PRITCHETT.

282. Physical Laboratory.—Practice in handling units in British and metric systems; experiments in mechanics illustrating composition and resolution of forces; the lever; the inclined plane; the pendulum; density and specific gravity. Experiments in heat, light and sound, illustrating the following subjects: thermometer calibration, calorimetry, hydrometry, expansion, wave lengths of sounds, laws of strings, laws of lenses and mirrors, refraction, photometry, and spectroscope. Text-book used: Milliken & Gale's *A Laboratory Course in Physics*. One period. Required of Freshmen in Engineering Courses. Mr. LATANÉ and Mr. PRITCHETT.

283. Physical Laboratory.—Continuation of Study 282. Elementary experiments in magnetism; the electric circuit; primary batteries; measurements of electromotive force, current, and resistance. One period. Prerequisite, Subject 282. Required of Sophomores in Electrical and Mechanical Engineering and in Chemistry. Mr. PRITCHETT.

ELECTRICAL ENGINEERING.

Equipment.

The courses in Electrical Engineering are accompanied by work in the laboratory or the designing room. The Department is provided with excellent quarters in the new Engineering Building, completed this spring. The dynamo laboratory is a room ninety feet by thirty feet, situated in the basement of the west wing. The equipment consists of direct and alternating current dynamos and motors of practically all types and in size ranging from one to thirty-seven kilowatts, the aggregate capacity being about two hundred kilowatts in machines and seventy-five kilowatts in transformers. Power is supplied to the laboratory from the College power house. A full complement of ammeters, voltmeters, wattmeters, and the necessary standardizing instruments is provided.

On this floor are also the high-tension laboratory, the photometric room, the storage-battery room, and the Department shop and storerooms.

On the first floor of the building are the lecture and recitation rooms, the room for drafting and design, a laboratory for advanced electric and magnetic measurements and the standard instruments, and the Department library and offices.

POWER HOUSE.

The power house, which is also available for student instruction, is a fine brick building, containing an excellent equipment of the most modern type. This consists of a 75-kw. 600-volt three-phase Crocker-Wheeler alternator, directly connected to a Skinner engine; two 50-kw. 300-volt three-phase Crocker-Wheeler alternators driven by a De Laval steam turbine, with direct-driven exciter; two additional exciting units, one engine-driven and one motor-driven, and a completely equipped switchboard.

LIBRARY.

The department has a small but growing library, and takes a number of the leading electrical journals, all of which are at all times available for the students' use.

SUBJECTS OF INSTRUCTION.

284. **Direct Current Machinery and Apparatus.**—A thorough study is made of the production and utilization of direct currents, beginning with the theory of the magnetic circuit, electromagnetic induction, electrical measurements, storage batteries, dynamos and motors, and operation and care of direct current machinery. Text-book used: Franklin & Esty's *Elements of Electrical Engineering.* Three periods, first term; two periods, second and third terms. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 281, 342, 343 and 344. Professor BROWNE.

285. **Electrical Engineering.**—An introductory course for students in other engineering departments, consisting of the study of the apparatus used in the production, distribution, and utilization of electrical power. Required of Juniors in Mechanical Engineering. Two periods. Prerequisites, Subjects 281, 342, 343 and 344. Professor BROWNE.

286. **Alternating Currents and Machinery.**—A study of the flow of periodic currents in circuits containing resistance, inductance and capacity. The construction, operation and performance of alternating current machinery. Text-book used: Franklin & Esty's *Alternating*

Currents. Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284, 345, 346. Professor BROWNE.

287. Industrial Applications of Electricity.—A detailed study is made of the many industrial applications of electricity, including the various methods of distributing electrical energy, illumination, electric traction, the electric drive in mill and factory, electric power stations, industrial electro-chemistry and electro-metallurgy, telegraphy, and telephony. Two periods. Required of Seniors in Electrical Engineering. Prerequisites. Subjects 284 and 289. Professor BROWNE and Assistant Professor McINTYRE.

288. Electrical Transmission of Power.—A practical study of the problems involved in the transmission of power from the generating station to the consumer. Hydroelectric developments. High tension transmission. Required of Seniors in Electrical Engineering. Two periods throughout the second and third terms. Prerequisites, Subjects 284, 289. Professor BROWNE.

289. Direct Current Laboratory.—This study accompanies that of direct current machinery. It includes use of standardizing apparatus, calibration of instruments, advanced electric and magnetic measurements, and the operation and testing of direct-current dynamos and motors. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 281 and 283. Assistant Professor McINTYRE.

290. Electrical Engineering Laboratory.—This course accompanies Study 285. Instruction is given in the care and operation of direct and alternating current machinery. Required of Juniors in Mechanical Engineering. One period. Prerequisites, Subjects 281, 283. Assistant Professor McINTYRE.

291. Advanced Dynamo Laboratory.—This study is taken up simultaneously with the study of alternating currents. It includes practice with alternating currents, measurement of inductance and capacity, experimental study of transformers. alternating current generators and motors, advanced methods of testing electrical apparatus, and shop testing. Text-book used: Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 289. Assistant Professor McINTYRE.

292. Electrical Design.—An introductory course in the designing of electrical apparatus, taking up the design of rheostats and heating devices, controllers, and electromagnets, the design of transformers, direct and alternating current dynamos and motors. Two periods. Required of Seniors in Electrical Engineering. Prerequisite, Subject 284. Professor BROWNE.

Course in Chemistry.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in that department. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in applied chemical subjects. The kindred scientific subjects of Biology and Physics are taught, together with the cultural studies included in the other courses.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of this department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil; and for the dyeing of cotton goods.

CHEMICAL EQUIPMENT.

The laboratories of general and analytical chemistry are located in the main building of the College, and are well furnished. The tables are of yellow heart-pine with oak tops. Each student is provided with water, gas, all necessary reagents, ample working space, together with lockers for the storage of apparatus, etc. The quantitative laboratory is located on the first floor, and will accommodate thirty-two students. The laboratory for introductory chemical work is in the basement, and will accommodate one hundred and eighteen students.

During the summer of 1911 the Chemical Department will be removed to the second floor of the new Engineering Building, in which its equipment will be very materially increased.

The chemical library is well supplied with reference books. It receives the leading chemical journals and owns complete sets of many of the most important of them.

VI. The Four-year Course in Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 300	2	2	2
Inorganic Chemistry (laboratory), 301	1	1	1
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Botany, elementary, 320	3	3	--
Botany, systematic, 321	--	--	3
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2

Sophomore Year.

Organic Chemistry, 302	2	2	2
Organic Chemistry (laboratory), 301	1	1	1
Analytical Chemistry, Qualitative, 304	2	2	2
Electricity and Magnetism, 281	2	2	2
Physical Laboratory, 283	1	1	1
Physiology, 328	2	--	--
Wood Shop, 140	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
American Literature, 361	3	3	3
Military Tactics, 391	1	1	1
Military Drill, 390	3	3	2

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 303	2	2	2
Organic Chemistry (laboratory), 306	3	3	3
Analytical Chemistry, Quantitative, 305	7	7	7
Bacteriology, 322	2	2	2
German, 370	3	3	3
Advanced Rhetoric, 362	3	3	--
Public Speaking, 363	--	--	3
Military Drill, 390	3	3	2

Senior Year.

Inorganic Chemistry, 309	2	2	2
Physiological Chemistry, 307	2	2	2
Physiological Chemistry (laboratory), 308	3	3	3
Analytical Chemistry, Quantitative, 305	4	4	4
Theoretical Chemistry, 310	2	2	2
German, 370	3	3	3
Elect six periods from the following:			
English Literature, 364	2	2	2
Economics, 380	1	1	1
Military Drill, 390	3	3	3
Advanced Bacteriology, 323	3	3	3
Soils, 331	3	3	3
Zoology and Entomology, 325	2	2	2
Drawing, 230	2	2	2
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
Other subjects if approved by the Professor of Chemistry.			

300. Inorganic Chemistry.—McPherson & Henderson's *Elementary Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores in Engineering. Two periods required of Freshmen in Chemistry. Professor WITHERS and Doctor WILLIAMS.

301. Inorganic Chemistry.—Laboratory work. McPherson & Henderson's *Exercises in Chemistry.* Chemical Experiments. The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. Two periods. Required of Sophomores in Engineering. One period. Required of Freshmen in Chemistry. Mr. PATE.

302. Organic Chemistry.—*Moore's Outlines of Organic Chemistry.* The fundamental principles of organic chemistry and the more important compounds are studied. Laboratory work accompanies the lectures and recitations. Three periods. Required of Sophomores in Chemistry. Professor WITHERS.

303. Organic Chemistry.—A continuation of 302. Two periods. Required of Juniors in Chemistry. Professor WITHERS.

304. Analytical Chemistry.—Baskerville & Curtman's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common elements in unknown substances. Two periods. Required of Sophomores in Chemistry. Doctor WILLIAMS.

305. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of agricultural and technical importance. Seven periods. Required of Juniors in Chemistry. Four periods. Required of Seniors in Chemistry. Doctor WILLIAMS.

306. Organic Chemistry.—Laboratory work. Orndorff's *Laboratory Manual* and Gatterman's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. Three periods. Required of Juniors in Chemistry. Doctor RAY.

307. Physiological Chemistry.—Lectures and recitations. Reference—Simon's *Physiological Chemistry.* A discussion of the albumins, carbohydrates and fats; ferments, the digestive fluids and the processes of digestion, etc. Two periods. Required of Seniors in Chemistry. Dr. RAY.

308. Physiological Chemistry.—Laboratory work to accompany No. 307. Three periods. Required of Seniors in Chemistry. Dr. Ray.

309. Advanced Inorganic Chemistry.—Lectures and recitations. Two periods. Required of Seniors in Chemistry. Doctor Williams.

310. Theoretical Chemistry.—Two periods. Required of Seniors in Chemistry. Professor Withers.

BOTANY AND BACTERIOLOGY.

320. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi. The student's knowledge is made his own through field work and simple independent investigations. Three periods, first and second term. Required of Freshmen in Chemistry. Professor Stevens.

321. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Freshmen in Chemistry. Mr. Norton.

322. Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation, and disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor Stevens and Mr. Norton.

323. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Three periods. For Seniors in Chemistry. Professor Stevens and Mr. Norton.

ZOOLOGY AND ENTOMOLOGY.

325. Zoology.—The fundamental principles of animal life, together with a knowledge of the structure and classification of animals, are developed by lectures, laboratory work, and text-books. One term is devoted to vertebrates and invertebrates, with only a very brief study of insects, but including some of the common parasites infecting man and the domestic animals. This course is intended to present a general view of the animal kingdom, and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Elective for Seniors in Chemistry. Assistant Professor SMITH.

326. **Economic Entomology.**—Elements of insect structure and classification. Injurious insects and remedies: (a) of orchards; (b) of small fruits; (c) of truck and garden crops; (d) of cotton, corn, tobacco, grains, and grasses; (e) of forest, shade and ornamental plants; (f) of barn, mill, and household. Lectures and demonstrations. Two periods, third term. Elective for Seniors in Chemistry. Assistant Professor SMITH.

PHYSIOLOGY.

328. **Animal Physiology.**—The term's work will deal largely with a study of the structure of the body, and with a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, with laboratory exercises illustrating the principles of physiology. Two periods, first term. Required of Sophomores in Chemistry. Professor ROBERTS.

SOILS.

331. **Soils.**—Attention is given to the forces that decompose and disintegrate rock and to the influence of these forces and of the various kinds of rock on the resulting soil. The physical characters such as water-holding capacity, capillarity, drainage, effect of mulches, temperature and weight, and the modification of these characters by tillage, cropping, and all operations of practical soil management are discussed and exemplified in the class room, laboratory, and field. Some attention is given to the classification of soils in the United States, and especially in North Carolina. The physical, chemical, and bacteriological soil conditions are discussed in relation to each other and to their effects on soil fertility. Systems of maintaining the permanent productiveness of soils are studied. Three periods. Elective for Seniors in Chemistry. Associate Professor SHERWIN.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Course, yet it is not the purpose to subordinate the general theory of Mathematics to the practical side.

The work consists of recitations, written exercises, and lectures, with written tests each month.

340. Algebra.—Wells's *New Higher Algebra*. Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: for first term, entrance requirements; for second term, the work of the first term; or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent on the work of the first term. Professor YATES, Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

341. Plane Geometry.—Wentworth's *Plane and Solid Geometry*. A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

342. Solid Geometry.—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 341. Professor YATES, Mr. RICHARDSON, and Mr. HARRELSON.

343. Advanced Algebra.—Wells's *New Higher Algebra*. The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite, 340 and 341. Professor YATES and Mr. RICHARDSON.

344. Trigonometry.—Wells's *Plane and Spherical Trigonometry*. Plane Trigonometry. Definitions of the trigonometric functions; derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 340 and 341. Professor YATES and Mr. RICHARDSON.

345. Analytical Geometry.—Nichols's *Analytical Geometry*. Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves, and geometry of three dimensions. Five periods, first term; two periods, second term. Required of Juniors in Engineering. Prerequisite, 342, 343 and 344. Professor YATES.

346. Differential and Integral Calculus.—Osborne's *Elements of*

Calculus. A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of indeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Three periods, second term; five periods, third term. Required of Juniors. Three periods, first term. Required of Seniors. Prerequisite: For differential calculus, 342, 343 and 344; for integral calculus, differential calculus and 345. Professor YATES.

ENGLISH.

360. **Composition and Rhetoric.**—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

361. **American Literature.**—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

362. **Advanced Rhetoric.**—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

363. **Public Speaking.**—The principles governing the preparation and the delivery of public addresses are given in text-books and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Three periods, third term. Required of Juniors. Professor HARRISON.

364. **English Literature.**—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Two periods. Elective for Seniors. Professor HARRISON.

ECONOMICS.

380. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. One period. Doctor SUMMEY.

MODERN LANGUAGES.

The aim of the department is to enable one (a) to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and (b) to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, by frequent repetitions, and by a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages regularly taught are German for students of Chemistry and Mechanical Engineering, and Spanish for Civil and Electrical Engineering students.

370. **German.**—Worman's Modern Languages, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's

Practical Lessons in German; Practical German Grammar, by Calvin Thomas; *German Reader*, by Fischer; and a scientific reader. Three periods. Elective for Juniors or Seniors. Doctor RUDY.

371. **French.**—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories from French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor RUDY.

372. **Spanish.**—Worman's *Modern Languages*, first and second Spanish books; *Introduccion a la Lengua Castellana*, by Marion y Des Garrenes; a Spanish grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor RUDY.

MILITARY SCIENCE.

390. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; two hours, third term. Required of all classes except Seniors. Seniors are either to take drill or three extra hours in some other subject instead. Commandant PEACE and Officers of the Battalion.

391. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, and Guard Duty. One period. Required of Sophomores. Captain PEACE.

Textile Courses.

VIII. The Four-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a typical cotton mill, is fully equipped with all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of the cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, and cotton fabrics of different kinds from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course, leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to students who can not spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to that of a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and class room for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening Room.—One cotton gin, made by Continental Gin Company, Birmingham, Ala. One thread extractor, made by Kitson Machine Co., Lowell, Mass. One combination opener and breaker lapper, made by Kitson Machine Co., Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Co., Lowell, Mass.

Carding Room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco and Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine, and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11x5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 48-spindle intermediate roving frame for 9x4½-inch bobbin, made by Saco and Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7x3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I. One 80-spindle jack roving frame for 6x2½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Co., Woonsocket, R. I.

Spinning Department.

Spinning Room.—One 64-spindle spinning frame for warp; one 80-

spindle spinning frame for filling, made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling. made by Saco and Pettee Machine Shops, Biddeford, Me. One 48-spindle spinning frame, combination build, made by D. A. Tompkins Co., Charlotte, N. C. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co., Oldham, England.

Spooling, Twisting and Winding.—One 40-spindle spooler, made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works, Whitinsville, Mass. One 32-spindle spooler, made by Easton & Burnham, Pawtucket, R. I. One 40-spindle spooler, made by D. A. Tompkins Co., Charlotte, N. C. One 48-spindle twister, made by Whitin Machine Works, Whitinsville, Mass. One 100-spindle wet twister, made by Draper Company, Hopedale, Mass. One 48-spindle twister, one-half for wet, one-half for dry twisting, made by Fales & Jenks Machine Co., Pawtucket, R. I. One 50-spindle reel, one-half live, one-half dead spindles, made by D. A. Tompkins Co., Charlotte, N. C. One 40-spindle reel, made by Draper Company, Hopedale, Mass. One 6-spindle universal winding machine, made by Universal Winding Co., Boston, Mass. One section warper, 400 ends, made by Draper Company, Hopedale, Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One beaming machine, made by Lewiston Machine Co., Lewiston, Me. One beaming machine, complete, made by the T. C. Entwistle Co., Lowell, Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen looms; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn, Lincoln & Co., Fall River, Mass. One sheeting loom, one 12-harness dobby loom and one 24-harness dobby loom, one 4x1 gingham loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2x1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton 4x1 box gingham loom, one Crompton 4x1 box loom with 20-harness dobby, one Crompton 2 and 1-box loom with 400-hook Jacquard machine, one Knowles Gem loom with 4x4 box, one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom

Works, Worcester, Mass. One single-box loom with 200-hook table-napkin Jacquard machine. One 4x1 box table-cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Co., Worcester, Mass. One Whitin loom with 624-hook Halton Jacquard for crochet quilts. Ten 4x4 box hand looms with 30-harness witch-heads for narrow fabrics. Two 4x4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thos. Halton's Sons, Philadelphia, Pa.

Knitting.—One full automatic knitting machine, made by Geo. D. Mayo Machine Company, Laconia, N. H. One combination ribber and footer, one ribber made by Scott & Williams, Philadelphia. One "Banner" knitting machine, made by Hemphill Manufacturing Co., Pawtucket, R. I. One ribber, made by Wildman Manufacturing Company, Norristown, Pa. One looper, made by Beattie Manufacturing Co., Cohoes, N. Y. One looper, made by Grosser Machine Company, New York.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables, and all the necessary apparatus for experimental dyeing, dye-testing, color-matching, and the testing of dyed samples to light, acids, alkalis, etc., as well as for carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, and dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dyestuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

H. A. Metz & Co., New York.
Badische Company, New York.
Farbenfabriken of Elberfeld Co., New York.
Danker & Marston, Boston, Mass.

Berlin Aniline Works, New York.
Cassella & Co., New York.
Bosson & Lane, Boston.
Kallé & Co., New York.
Geisenheimer & Co., New York.

Dye-house Equipment.—Seven dye vats; one Roessler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kier; one hand-dyeing jigger; one 15-gallon steam-jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Co.'s warp dyeing machine; one Textile Finishing Co.'s warp sizing machine; one 5-can upright dryer; one small Lightfoot raw stock dyeing machine; one Tolhurst Machine Works hydro-extractor; one Schaum & Uhlinger hydro-extractor; one Mather & Platt cloth printing machine; one Fries warp dyeing machine; one dry closet.

A full equipment of analytical balances and other necessary apparatus for experiment work.

Power and Power Transmission.

One 30-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Co., for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks-Morse Co., for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Co., Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Co., Chicago, Ill.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400†	1	1	1
Weaving, 401	2	2	2
Mechanical Drawing, 430	2	2	2
Wood-work, 431	2	2	2
Forge-work, 432	2	2	--
Foundry, 433	--	--	2
Algebra, 441	5	3	--
Geometry, 442	--	2	5
Elementary Physics, 440	2	2	2
Composition and Rhetoric, 450	3	3	3
Ailitary Drill, 480	3	3	2

Sophomore Year.

Carding and Spinning, 400	2	2	2
Weaving, 401	2	2	2
Textile Designing, 402	2	1	1
Cloth Analysis, 403	--	1	1
Inorganic Chemistry, 420	3	3	3
Inorganic Chemistry (laboratory), 421	2	2	2
Geometry, 443	5	--	--
Advanced Algebra, 444	--	3	--
Trigonometry, 445	--	2	5
Mmerican Literature, 451	3	3	3
Military Drill, 480	3	3	3
Military Tactics, 481	1	1	1

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*The lecture and recitation periods are one hour; the laboratory, shop and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	4	4	4
Weaving, 401	3	3	3
Textile Designing, 402	3	2	2
Cloth Analysis, 403	--	1	1
Dyeing, 410	2	2	2
Dyeing (laboratory), 411	3	3	3
Steam Engine and Boiler, 435	2	2	2
English, 452, 453	3	3	3
Military Drill, 480	3	3	2

Senior Year.

Carding and Spinning, 400	4	4	4
Weaving, 401	4	4	4
Textile Designing, 402	3	3	3
Cloth Analysis, 403	1	1	1
Dyeing, 410	1	1	1
Dyeing (laboratory), 411	3	3	3
Mill Accounting and Mill Costs, 404	1	1	1
Machine-shop work, 434	2	2	2
Elect three periods from the following:			
English Literature, 454	2	2	2
Economics, 455	1	1	1
Military Drill, 480	3	3	2
Modern Languages, 460, 461	3	3	3

DESCRIPTION OF SUBJECTS.

400. **Carding and Spinning.**—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant, its growth, varieties, ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards, sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels, cone-winders. Construction and functions of each machine; making the various calculations. Drafts, speed of parts, production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of Freshmen, Sophomores, Juniors, and Seniors. Assistant Professor PARKER.

401. **Weaving.**—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper, stop motion, measuring motion, creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher, creel, cylinder; immersion roll, squeeze rolls, drying fan, separator rolls, winding yarn on beam, cone drive, slow motion, measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing; ingredients; value of ingredients; sizing recipes for light, medium, and heavy sizing. Loom-mounting: reeds and harnesses; drawing in, and putting warps in loom. Looms: hand looms and power looms, construction of plain loom, principal movements in weaving, let-off and take-up motions, filling stop motion, warp stop motion. Cams and their construction. Magazine looms, construction and advantages. Drop box looms: chain building for box looms, changing boxes to have easy-running looms, construction and value of multipliers, timing and fixing box motions. Pick and pick-looms. Box-chain, and multiplier-chain building, arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby, single and double index; construction and fixing of dobby; extra appliances necessary for weaving leno, towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations, speed and production calculations, relative speed of looms, counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering,

tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of Freshmen, Sophomores, Juniors, and Seniors in the Four-year Course and of first and second year students in the Short Course. Professor Nelson and Mr. Steed.

402. **Textile Designing.**—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain, twill, satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves, plain and fancy basket weaves, warp and filling rib weaves. Broken twills, curved twills, corkscrew twills, entwining twills. Granite weaves, satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno, honeycomb weaves. Bedford cords and combination with other weaves. Wave designs, pointed twills, diamond effects. Plain and fancy piques. Double plain, figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor Nelson and Mr. Steed.

403. **Cloth Analysis and Fabric Structure.**—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double

cloth. Required of Sophomores, Juniors, Seniors. Professor NELSON and Mr. STEED.

404. **Mill Accounting and Cost Finding.**—The general fundamental principles of the various systems of cost-finding as applicable to the different classes of manufactured products are carefully explained, as well as questions of commissions, discounts, depreciation, inventories, distribution of expenses, etc. As a clear understanding of accounting is necessary for intelligent cost-finding, the method of keeping accounts is studied in detail.

The general idea is to impress on the student the relative cost of production for any class of manufactured product and to show how the different processes of manufacturing influence cost.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dye stuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	1	1	1
Weaving, 401	2	2	2
Mechanical Drawing, 430	2	2	2
Wood-work, 431	2	2	2
Forge-work, 432	2	2	--
Foundry, 433	--	--	2
Algebra, 441	5	3	--
Geometry, 442	--	2	5
Elementary Physics, 440	2	2	2
Composition and Rhetoric, 450	3	3	3
Military Drill, 480	3	3	2

Sophomore Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	2	2	2
Weaving, 401	2	2	2
Textile Designing, 402	2	1	1
Cloth Analysis, 403	--	1	1
Inorganic Chemistry, 420	3	3	3
Inorganic Chemistry (laboratory), 421	2	2	2
Geometry, 443	5	--	--
Advanced Algebra, 444	--	3	--
Trigonometry, 445	--	2	5
American Literature, 451	3	3	3
Military Drill, 480	3	3	2
Military Tactics, 481	1	1	1

Junior Year.

Dyeing, 410	2	2	2
Dyeing (laboratory), 411	3	3	3
Organic Chemistry, 422	2	2	2
Analytical Chemistry, 424, 425	5	7	7
English, 452, 453	3	3	3
Military Drill, 480	3	3	2
German, 460	3	3	3

Senior Year.

Dyeing, 410	3	3	3
Dyeing (laboratory), 411	2	2	2
Organic Chemistry, 423	2	2	2
Analytical Chemistry, 425	6	6	6
Organic Chemistry (laboratory), 426	3	3	3
Elect two subjects from the following:			
English Literature, 454	2	2	2
Economics, 455	1	1	1
Military Drill, 480	3	3	2
German, 460	3	3	3

DESCRIPTION OF SUBJECTS.

410. **Dyeing.**—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers, and the action of acids, alkalis, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing, such as the boiling out and bleaching of cotton, and the chemical reactions involving each step; the adaptability of water for bleaching and dyeing, followed by the theories of dyeing; substantive dyestuffs and their application to cotton; after-treatment of direct dyestuffs, including diazotising and developing and the topping with basic dyestuffs; the application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts; dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber; the methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers; the scouring and bleaching of wool; the carbonization and chlorination of wool; the application of basic, acid, chrome, eosine, and direct colors to wool; dyeing wool with logwood, fustic, and other natural dyewoods; methods of the making and dyeing of artificial silk; the boiling off, bleaching and dyeing of natural silk; study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods; the use of the various kinds of machines used in bleaching and dyeing; the dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions; the science of color-mixing; color-matching on textiles; the use of the tintometer and colorimeter; calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing; quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk; the testing of dyestuffs for their shade, tinctorial power, and leveling properties; comparative dye trials to determine money value; testing for mixtures; the reactions of acids, alkalis and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

411. Dyeing Laboratory.—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a pattern book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. HALSTEAD.

CHEMISTRY.*

420. Inorganic Chemistry.—McPherson & Henderson's *Elementary Study of Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS and Doctor WILLIAMS.

421. Inorganic Chemistry.—Laboratory work. McPherson & Henderson's *Exercises in Chemistry.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the class room. The latter part of the year is devoted to an introductory course in qualitative analysis. Two periods. Required of Sophomores. Mr. PATE.

422. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied through the alipathic series. Two periods. Required of Juniors in Dyeing. Professor WITHERS.

423. Organic Chemistry.—A continuation of 422, beginning with the aromatic series. Two periods. Required of Seniors in Dyeing. Professor WITHERS.

424. Analytical Chemistry.—Treadwell's *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Five periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.

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*For further information, see course in Chemistry.

425. **Analytical Chemistry.**—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Six periods. Required of Seniors in Dyeing. Doctor WILLIAMS.*

426. **Organic Chemistry.**—Laboratory work. Gatterman's *Practical Methods of Organic Chemistry,* translated by Shober. The typical transformations and syntheses of the alipathic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Three periods. Required of Seniors in Dyeing. Doctor RAY.

MECHANICAL ENGINEERING.*

430. **Mechanical Drawing.**—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine; elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of Freshmen. Mr. SELBY.

431. **Wood-work.**—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in wood-turning. Two periods. Required of Freshmen. Mr. CLAY.

432. **Forge-work.**—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

433. **Foundry.**—Recitations and exercises in foundry work, including moulding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of Freshmen, third term. Mr. WHEELER.

434. **Machine-shop Work.**—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. PARK.

435. **Steam Engines and Boilers.**—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and to inertia and tangential

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*For further information, see course in Mechanical Engineering.

pressures; the class also studies the steam-engine indicator, indicator rigging, and steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction are noted. The following subjects are studied in detail: number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed-water heaters; mechanical stokers; smoke-consumers and chimneys. Two periods. Required of Juniors in Textile Industry. Professor SATTERFIELD.

PHYSICS.*

440. **Elementary Physics.**—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat; sound; introduction to the study of light. Two periods. Required of Freshmen. Mr. LATANE.

MATHEMATICS.

441. **Algebra.**—Wells's *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutation, combinations and contined fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent, on the work of the first term. Professor YATES, Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

442. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

443. **Solid Geometry.**—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of

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*For further information, see course in Electrical Engineering

Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 442. Professor YATES, Mr. RICHARDSON, and Mr. HARRELSON.

444. Advanced Algebra.—Wells's *New Higher Algebra.* The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite: 441 and 442. Professor YATES and Mr. RICHARDSON.

445. Trigonometry.—Wells's *Plane and Spherical Trigonometry.* Plane Trigonometry. Definitions of the trigonometric functions; derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 441 and 442. Professor YATES and Mr. RICHARDSON.

ENGLISH.

450. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

451. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

452. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

453. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Three periods, third term. Required of Juniors. Professor HARRISON.

454. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Two periods. Elective for Seniors. Professor HARRISON.

ECONOMICS.

455. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Open to Seniors. Doctor SUMMEY.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, by frequent repetitions, and by a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may elect German during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German and French.

460. **German.**—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; and a scientific reader. Elective for Juniors and Seniors. Doctor RUDY.

461. **French.**—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Francaise;* selected short stories from French literature, and scientific readers. Doctor RUDY.

This subject may be taken by special petition to the Faculty.

MILITARY SCIENCE.

480. **Drill.**—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms; and two periods, third term. Required of all classes except Seniors. Seniors are to either take drill or three extra hours in some other subject instead. Commandant PEACE and Officers of the Battalion.

481. **Tactics.**—Theoretical instruction in Infantry Drill, Field Service, Army Regulations, Guard Duty, and Target Practice. One period. Required of Sophomores. Captain PEACE.

Short Courses.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following short courses are offered. None of these courses, of course, lead to graduation, and they are not, in any sense, intended as preparatory courses to the regular four-year classes. They are designed simply to help young men better fit themselves, by a year or two of practical work under competent and interested supervision, for their chosen spheres of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take these shorter courses will be carefully drilled in the handicraft and mechanism of their art and in the application of elementary science to the farm, garden, dairy and orchard.

ONE-YEAR COURSE IN AGRICULTURE.

Agriculture (Elementary).—The course in Elementary Agriculture will consist of lectures and recitations on crops, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, including the identification and habit of growth of farm crops and the drawing of plans for farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Three periods, first term; two periods, second term; three periods, third term. Professor Newman.

Soils and Fertilizers.—Lectures, recitations, and practical work in laboratory and field on the classification and management of soils, tillage, drainage, and fertilization. The student is shown the best methods of handling the different types of soil and the most economical use of fertilizers. Three periods, first and second terms. Associate Professor Sherwin.

Animal Husbandry.—Study of breeds, judging and management of live stock, animal breeding, and stock feeding. There will be lectures on all the above subjects, supplemented by practical work as far as possible. Three periods, first, second and third terms. Professor McNutt.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he becomes familiar with their construction and proficient in operating them.

The laboratory course is supplemented by lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Four periods, third term. Mr. TURNER.

Veterinary Science.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live stock to prevent diseases, and the treatment of some of the most common diseases. Three periods, first term. Doctor ROBERTS and Doctor KOONCE.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. Mr. JEFFREY, Mr. TAYLOR.

Fruit Culture.—This course treats of fruit growing as applied to the different sections of the State and the possibilities embodied in its further development. A text-book on the general subject of fruit culture is supplemented by lectures on the leading fruits, dealing with the kind of soil for fruits and its preparation, laying out the orchard, varieties, methods of propagation, planting, cultivation, fertilizing, pruning, harvesting, and marketing.

Practical exercises are given in laboratory, orchards and vineyards, which include budding, grafting, top-grafting; making of cuttings; pruning of fruit and ornamental trees; fruit bud studies; planting and transplanting; identification of varieties; packing; and handliug of nursery stock. Three periods, first term. Mr. CRIDER.

Vegetable Gardening.—This course treats of the trucking industry of the State, and the growing of vegetables for home use. A text-book is used, supplemented by lectures on the growing, handling and marketing of the leading vegetables.

Practical exercises are given in the laboratory and field which include germinative tests of seeds; seed sowing; methods of transplanting and culture; manipulation of garden tools; construction and management of hotbeds and cold-frames, and protection of plants from insects. Three periods, third term. Mr. CRIDER.

Diseases of Plants.—Practical instruction will be given concerning the chief fungous or bacterial diseases attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures. Three periods, second term. Professor STEVENS.

Plant Life.—The structure of the leading types of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Two periods, first term. Mr. NORTON.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, second term; two periods, third term. Assistant Professor SMITH.

Military Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours, first and second terms. Two hours, third term. Commandant PEACE and Officers of the Battalion.

Wood Shop.—The use and care of ordinary wood-working and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. Required of One Year Agricultural Course, second and third terms. Mr. CLAY.

Forge Shop.—This course is designed to teach the use of the ordinary blacksmith's tools, and the making of the more common forgings, such as chains, hooks, etc. Required of One Year Agricultural Course, first term. Mr. WHEELER.

Mechanical Technology.—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Arrangement, sizes, and care of belting and shafting. Elementary power problems, steel-making, etc. One period. Required of first year Short Course. Professor SATTERFIELD.

Short Course English.—This is a thoroughly practical course in the elements of grammar, and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading also is assigned for private study. Three hours a week. Required of one-year students. Doctor SUMMEY and Mr. PECKHAM.

ONE-YEAR COURSE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	2	3
Soils and Fertilizers	3	3	--
Animal Husbandry	3	3	3
Dairying	--	--	4
Veterinary Science	3	--	--
Poultry Husbandry	--	3	3
Fruit Culture	3	--	--
Vegetable Gardening	--	--	3
Plant Life	2	--	--
Diseases of Plants	--	3	--
Entomology	--	3	2
Forge-work	2	--	--
Wood-work	--	2	2
English	3	3	3
Drill	3	3	2

Short Winter Courses in Agriculture.*

ONE-WEEK CORN COURSE.

Begins January 3 and Ends January 9, 1912.

Professors Newman, Stevens, Smith, Sherwin, Schaub, and Hudson.

This course is substituted for the One-week Cotton Course which has been given in the past. The instruction and practice given will be strictly practical and will embrace the selection and preparation of the soil; fertilizers, the mixing of fertilizers and home manures; manner and time of applying fertilizers; varieties of corn; planting; cultivation; harvesting; storing; marketing; judging; seed selection; botanical characters; insect pests; fungous and bacterial diseases and their remedies.

There has never in the history of North Carolina been so great interest in corn growing as at the present time, and the main object of this course will be to aid those who wish to grow more corn and better corn on less land at lower cost. Emphasis will be given soil preparation, fertilization, rotation and the improvement of the corn plant by breeding and seed selection. Those taking this course will have no expenses other than board and lodging. Board may be had at the College mess hall for $2.50 per week. No examinations are required.

SEVEN-WEEKS COURSE IN GENERAL AGRICULTURE.

Begins January 10 and Ends March 3, 1912.

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, and to operate dairies, fruit farms, truck and market gardens. The National Department of Agriculture, the State Experiment Stations, the Agricultural and Mechanical Colleges and the hundreds of commercial industries requiring scientifically trained men, are eagerly seeking young men of such force and training as are given in the Agricultural and Mechanical Colleges. The demand is greater than the supply. The teaching of agriculture in the public schools and the organization of agricultural high schools, with agricultural instruction as an important feature, have met with a serious check for no other reason than that there are not enough trained teachers to supply the demand. This course is meant to help those (1) who want to cultivate their own farms with more knowledge and who want to keep informed as to recent improvements and recent farm literature;

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*For the purpose of strengthening the Wnter Course, certain changes will be made. These will be announced in Winter Course Circular, which is published in November of each year.

(2) who want to improve their teaching of agricultural subjects; (3) who want to specialize for a few weeks in some particular phase of farm industry.

EQUIPMENT.

The new Agricultural Building is devoted entirely to agriculture, and contains laboratories and class-rooms built and furnished especially for the purposes for which they are used. Equipment is constantly being added and facilities for instruction become better every year. The professors in each department of the School of Agriculture are specialists in their chosen work, and are devoting their lives to study and to methods of improving rural life.

EXPENSES.

No tuition is charged for the Seven-Weeks Course, and board may be had in the mess-hall for $2.50 per week. The College will furnish lodging in the dormitories free if it has room. Room in the College buildings is very limited this year. Students who expect to room in the dormitories should provide themselves with bed cover, sheets, pillow cases, and towels.

While engaged in work in the dairy laboratory, students are required to wear white suits. These suits may be had at $1 apiece. The total expense of the course need not exceed $25 over and above railroad fare.

ADMISSION.

No examinations are required for entrance to the Seven-weeks Course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. The greater part of the instruction is given in the form of lectures and laboratory work, and the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects, and others by meetings of students for their mutual improvement.

The regular work of the Seven-weeks Course begins January 10th, but all should arrive the day before, in order that board and room may be arranged for, and so that each man may be ready for the work when it begins.

Should further information be desired, either the President or the Professor of Agriculture will take pleasure in furnishing it.

OUTLINE OF SEVEN-WEEKS COURSES.

GENERAL AGRICULTURE.

Professor Newman.

Farm Crops.—Selection of crops to be grown, and their economic relation to farm operations; preparation and cultivation; planting; seed selection and plant breeding on the farm; studies of the staple crops; corn, small grain, cotton and legumes; special crops to be grown in association with the live stock industry.

Farm Equipment and Farm Management.—Selection and laying out of farm; fences, roads, houses; tools and machinery; rotation; farming as a business.

SOILS AND FERTILIZERS.

Professor Sherwin.

This will include a study of the soils of the State; their formation and classification into Agricultural types; their physical properties; relation to moisture and air supply; best methods of conserving and regulating the soil moisture; principles and practices of drainage.

The effect of different soil and crop treatments, such as rotation, cultivation, and fertilization, will be studied. Considerable attention will be given to humus, farm manures and green manures, and to the use and home mixing of commercial fertilizers, with special reference to the time and methods of using and the best mixtures for special crops on different types of soil.

AGRICULTURAL BOTANY.

Professor Stevens.

This course will consist of the practical study of the diseases of plants, how to recognize them and how to prevent them; bacteria, their nature, their effects for good or harm in the farm home, and how to control them, and their function in the soil as nitrogen gatherers; the cross-breeding of plants; how to accomplish it, its object, and the benefits to be derived therefrom.

BREEDS OF LIVE STOCK AND STOCK JUDGING.

Professor McNutt and Mr. Turner.

Lectures on this subject will treat of the characteristics of the different breeds of live stock.

The practical part of the work will be given in the judging room, where the student is required to score the animals and pass upon their respective merits.

DAIRY FARMING.

Mr. Turner.

Lectures are given on the nature, composition, and secretion of milk; its uses and value as a food; the production and care of sanitary milk; management of dairy herd; details in the production of high-grade cream and butter; the marketing of dairy products, and their value when sold as milk, cream, butter, and cheese.

The dairy laboratory course, given in connection with the farm dairy lecture course, consists of twenty-four periods of two hours each, and comprises every detail of dairy work, butter-making, retailing milk, making cottage cheese and skim-milk buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products, and standardizing milk and cream.

FEEDS AND FEEDING AND STOCK RAISING.

Professor McNutt.

Lectures on this subject will treat of the composition and digestibility of home-grown and commercial feeds, methods of calculating rations for different classes of farm animals, and suggestions as to the best and most economical feeds for the different classes of live stock.

An outline will also be given of the care and management of the most prominent breeds of live stock.

DAIRY EQUIPMENT.

The dairy laboratories occupy about 4,000 feet of floor space on the ground floor of the new Agricultural Building, besides the locker-rooms, toilet and bathrooms on the same floor, and the dairy lecture-room on the first floor, used by dairy students.

The main laboratory is 36x57 feet, and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex separators; swing and barrel hand-churns of different sizes; cream vats; hand and power butter-workers; aërators and coolers; milk testers, and other articles useful in doing farm dairy work.

Recently a new dairy barn has been erected which is a model in dairy-barn construction, embodying every feature that goes to make a barn convenient and sanitary.

DISEASES OF LIVE STOCK.

Doctors Roberts, Cecil, and Koonce.

To maintain the usefulness of animals and to advance the live-stock interests, all who handle live stock should have some knowledge of the causes of disease and the nursing of sick animals.

A general conception of the structures of the body and their uses being essential to competent judging and feeding of animals, as well as to a knowledge of disease, a short time will be given to this subject. The structures will be divided into groups, so that in a limited time one may gain a fair idea of the composition of the body. Comparisons will be made of the structures of the various farm animals with those of man. Mounted skeletons of the horse, cow, and man, in the lecture-room, enable the student readily to become familiar with this part of the body.

The lectures will include the care and management of live stock to prevent disease, and the nature, causes, and treatment of the more common diseases and injuries.

One period each week will be devoted to a clinic where animals will be treated medicinally and operated upon. During the course there will be a practical demonstration of the tuberculin test upon the dairy herd.

HORTICULTURE.

Professor Reimer and Mr. Crider.

The course includes both lectures and field work, and is made especially applicable to North Carolina conditions.

Fruit Culture.—This includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of our leading fruits, which deal with the kind of soil, preparation of soils for fruits, and with varieties, planting, cultivation, fertilization, pruning, harvesting, and marketing. Special emphasis is laid on the home fruit garden.

Vegetable Gardening.—Lectures on the best methods of growing the leading vegetables for market and home use.

Laboratory Work.—Practice in plant propagation, such as budding, grafting, top grafting, pruning of fruit and ornamental trees; fruit-bud studies; planting and transplanting of trees and vegetables; construction of cold frames and hotbeds.

Equipment.—The Horticultural Department is well equipped for this work. The College has a very complete fruit plantation, which includes all the standard varieties of the following fruits: apple, pear, peach, plum, cherry, quince, persimmon, pecan, fig, muscadine grapes, fox grapes, raspberries, dewberries, and strawberries; also a nursery, where various methods of budding and grafting are carried on.

ENTOMOLOGY.

Assistant Professor Smith.

The course in Entomology is intended to teach students the general facts concerning the common injurious and beneficial insects, with which every one should be familiar.

Insect injury to farm crops, fruit, and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully ten per cent of the values of all agricultural products is destroyed each year, and yet there are many farmers who know very little of the habits and life-history of the most common insects. We should know how insects pass the winter, when they are most easily destroyed or prevented, and the best methods of combating them.

The course will consist of a number of lectures, illustrated by specimens, photographs, and charts, to familiarize the student with the principal insects affecting general farm crops and fruit trees. Field observations will be made to study insects that may be found during January and February. The preparation and application of various spray mixtures for controlling insects, including the use of spraying apparatus, will be made a special feature of the work.

POULTRY RAISING.

Assistant Professor Jeffrey and Mr. Taylor.

The subject of poultry raising will be considered from the farm standpoint. Instruction will include lectures and work with the fowls. Students will be told what to do and how to do it, and will also be required to do the work.

Instruction will be given in poultry-house construction, the breeds of fowls best suited to the farm, and their breeding, feeding, and management. Egg production and the production of market poultry will receive special attention. The former will be considered both from the standpoint of breeding and feeding, and the results obtained at our own and other Experiment Stations will be discussed. Market poultry will include the production of broiler or frying-size chickens, roasters, and capons. Incubation and brooding, both natural and artificial, will also be studied.

The Poultry Department is equipped with thirty breeding pens of several different types; a good incubator cellar, and several different makes of incubators; a brooder-house and both indoor and outdoor brooders of both the heated and fireless types, and a feed-room with steam engine and both grist and bone mills. Good specimens of ten different varieties of poultry best suited to farm requirements are kept so that students may become familiar with the requirements of the different breeds.

Students wanting to specialize in poultry will be given extra work in this department, taking charge of a pen of fowls, operating an incubator, raising chicks in a brooder, and keeping all the records necessary in poultry work.

GOOD ROADS.

The interest taken in good roads by the last Winter Course class and the interest manifested in the State at large has led the College authorities to secure through the National Office of Good Roads efficient lecturers and instructors, and a strong course will be given.

For further information, apply to C. L. Newman, Professor of Agriculture, West Raleigh, N. C.

ONE-WEEK COURSE IN FARM DRAINAGE.

This course is intended to meet the needs of farmers who want instruction in practical drainage. Methods of leveling which the average farmer can practice on his land are discussed and practiced. It is intended to show where to drain, how to get proper grades and size of tile needed, and how to lay the tiles. The work is mostly practice and is adapted to the needs of the average farmer who wishes to learn more about draining the wet parts of his land. It does not give information regarding projects which are properly engineering problems.

This course will be given during the first week following the Six Weeks' Course in Agriculture.

For further information, write to M. E. Sherwin, West Raleigh, N. C.

TWO-YEAR COURSE IN MECHANIC ARTS.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following two-year course in Mechanic Arts is offered.

This course does not lead to graduation, and it is not, in any sense, intended as a preparatory course for the regular four-year classes. It is designed simply to help young men better fit themselves by a year or two of practical work under competent and interested supervision, for their chosen sphere of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take this course will be carefully drilled in the handicraft of their art and in the application of elementary science to the shop, drawing room, and power plant.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing	3	3	3
Wood-work	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Mechanical Technology	2	2	2
Physics	2	2	2
Arithmetic	5	--	--
Algebra	--	5	5
English	3	3	3
Military Drill	3	3	2

Second Year.

Machine Drawing	3	3	3
Machine-shop Work	3	3	3
Power Machinery	3	3	3
Algebra	5	2	--
Geometry	--	3	5
English	3	3	3
Drill	3	3	3
Elective Work:			
Machine Shop or Drawing	2	2	2
Pattern Work	--	2	2
Foundry	2	--	--

SUBJECTS OF INSTRUCTION.

First Year.

Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of Descriptive Geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Three periods. Mr. SELBY.

Note.—Each student will be required to furnish, at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale, at practically cost, the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit, $10.00:

Drawing board 21x30 inches.
T-square 30 inches.
60° triangle 9 inches, transparent.
45° triangle 7 inches, transparent.
12-inch triangular architect's scale.
Irregular curve.
4 H pencil. H or F pencil.
Erasers for ink and pencil.
Penholder with fine points.
Pencil sharpener.

Instrument set consisting of:

6-inch compass with pen, pencil and lengthening bar.
5½-inch dividers with hair-spring adjustment.
3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
5½-inch ruling pen, 4½-inch ruling pen.

Wood-work.—The use and care of the ordinary wood-working bench tools. Exercises in laying out and working from drawings; sawing, planing and making of joints. The use and care of wood-working machines, such as saws, planers, sharpers, dovetailers, tenoners, etc. Exercises in wood-turning. Work on repairs about the College. Two periods. Mr. CLAY.

Forge-work.—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer: Special work on equipment and repairs about the College. Two periods, first and second terms. Mr. WHEELER.

Foundry.—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of first year. Elective for second year. Two periods, third term. Mr. PARK and Mr. WHEELER.

Mechanical Technology.—Classification and uses of wood-working and forging tools and machines. Methods of wood-working and forging. Arrangement, sizes, and care of belting and shafting; elementary power problems, steel-making, etc. Two periods. Professor SATTERFIELD.

Short Course English.—This is a thoroughly practical course in the elements of grammar, and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading is assigned for private study. Three hours a week. Required of first-year students. Doctor SUMMEY and Mr. PECKHAM.

Physics.—An elementary, practical course in physics designed to meet the needs of artisans. Properties of matter; units and measures; mechanics of materials; simple machines; heat. Two periods. Mr. LATANE.

Arithmetic.—Milne's *Standard Arithmetic.* A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Mr. HARRELSON and Mr. TUCKER.

Algebra.—Wells's *New Higher Algebra.* A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem-solving. Five periods, second and third terms. Professor YATES, Mr. HARRELSON, and Mr. TUCKER.

Second Year.

Machine Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Assistant Professor ELLIS.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Mr. PARK.

Power Machinery.—Descriptive study of the machinery of steam power plants, engines, boilers, condensers, pumps, steam turbines, piping, care and management, study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake, and boiler horse-power problems. Three periods. Mr. MORRIS.

Pattern-making.—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting; making of special patterns, cores and core-boxes, introducing draft, shrinkage, finish and the appliances and usages of modern pattern work. Prerequisite, Wood-work. Elective for second year. Two periods, second and third terms. Mr. CLAY and Mr. MORRIS.

Algebra.—Wells's *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; two periods, second term. Prerequisite: For first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent, on the work of the first term. Professor YATES, Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

Plane Geometry.—Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Prerequisite: Entrance requirements. Mr. RICHARDSON, Mr. HARRELSON, and Mr. TUCKER.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

TWO-YEAR COURSE IN TEXTILE INDUSTRY.

The two-year course is offered to students who can not spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning	2	2	2
Weaving	3	3	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Mechanical Drawing	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Arithmetic	5	--	--
Algebra	--	5	5
English	3	3	3
Military Drill	3	3	2

Second Year.

Carding and Spinning	5	5	5
Warp Preparation	--	--	1
Weaving	4	4	3
Textile Designing	2	1	1
Cloth Anyalsis	--	1	1
Dyeing	3	3	3
Machine-shop Work	2	2	2
English	3	3	3
Military Drill	3	3	2

DESCRIPTION OF SUBJECTS.

Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations,* by Tompkins; *Cotton Spinning,* by Nasmith. Required of first and second year students. Assistant Professor PARKER.

Weaving.—Lectures on construction of plain, twill, sateen, gingham, pick, and pick looms are given, also on construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms; construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up dobby on loom; fixing dobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production; counts of reed and cotton harness. Finishing cotton fabrics. Necessary equipment for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy,* by Nelson. Required of first and second-year students. Professor NELSON and Mr. STEED.

Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first and second year students. Professor NELSON and Mr. STEED.

Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of first and second-year students. Professor NELSON and Mr. STEED.

DRAWING AND SHOP WORK.

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of first-year students. Mr. SELBY.

Forge-work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods. Required of first-year students. Mr. WHEELER.

MATHEMATICS.

Arithmetic.—Milne's *Standard Arithmetic.* A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Required of first-year students. Mr. HARRELSON and Mr. TUCKER.

Algebra.—Wells's *New Higher Algebra.* A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. Five periods, second and third terms. Required of first year students. Professor YATES, Mr. HARRELSON, and Mr. TUCKER.

Drill.—School of the Soldier; Company and Battalion in Close and Extended Order; Ceremonies; Marches and Minor Tactics. United States Infantry Drill Regulations. Three hours for first and second terms; two hours, third term. Required of first and second-year students. Commandant PEACE and Officers of the Battalion.

ENGLISH.

Short Course English.—This is a thoroughly practical course in the elements of grammar, and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class and supplementary reading also is assigned for private study. Three hours a week. Required of first-year students. Doctor SUMMEY and Mr. PECKHAM.

ADDITIONAL SUBJECTS IN THE SECOND YEAR.

Warp Preparation.—Lectures on construction of warp preparation machinery, spooler; section warper, ball warper; size kettle; slasher. Practice in operating machines. Laying out pattern warps for long and short chain beaming. Size mixing and boiling; value of ingredients used in sizing; sizing recipes for light, medium, and heavy sizing. One period, third term. Required of second-year students.

Dyeing.—The object of this course is to give the student a sound practical knowledge of the fundamental principles which underlie the arts of bleaching, dyeing, mercerizing, etc., of cotton yarns and fabrics. The manipulation of the various machines used in bleaching, dyeing and mercerizing is carefully explained. The physical and chemical properties of the material to be dyed receive first consideration, followed by a study of the adaptability of water for bleaching, dyeing, mordanting, etc. The practical application of the dyestuffs themselves is treated in the most thorough and detailed manner, *e. g.*, the substantive dyestuffs dyed direct, diazotised and developed, after-treated with metallic salts, topped with basic dyes, etc., the basic dyestuffs, sulphur dyestuffs, indanthrene dyestuffs, etc. Practice in color-mixing and matching is given. The student in this way acquires a collection of several hundred dyed samples which, when mounted in his pattern book, serve as a valuable reference. The course is supplemented by lectures, which will include the consideration of many difficult problems that arise in the dye-house. Three periods. Required of second-year students. Mr. HALSTEAD.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of second-year students. Mr. PARK.

ENGLISH.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

Normal Courses.

I. **For Rural Teachers:**

- (a) **Two-year Course.**
- (b) **One-year Course.**
- (c) **Two-weeks Spring Course.**

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and there is a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The courses are devoted largely to agriculture and nature study, and include also a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The Normal Courses are as follows:

I. Courses for Rural Teachers.

(*a*) TWO-YEAR COURSE.

First Year.

SUBJECTS.		PERIODS A WEEK.		
		1st Term.	2d Term.	3d Term.
Agriculture		3	3	3
Nature Study	Plants	3	3	3
	Animals	3	3	3
English		3	3	3
Mathematics		5	5	5
Horticulture		3	3	3
Military Drill		3	3	2

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
Military Drill	3	3	2

(b) ONE-YEAR COURSE.

Methods of Teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	--	--
Diseases of Live Stock	--	5	--
Botany	3	--	--
Poultry	--	3	3
Entomology	--	--	3
Diseases of Plants	--	--	2
Agricultural Literature	1	1	1

Elective studies in any College department, *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing, and others.

THE MAY SCHOOL FOR TEACHERS.

May 15 to 27, 1911.

Agriculture, Nature Study and Common Branches.—This course is designed to meet the needs of teachers of the public, common and high schools who desire more preparation in Nature Study and Agriculture. Attention is also given to school gardens. The common branches are reviewed. Attendance here meets the legal requirement of attendance at an institute once in each two years.

The laboratories, library, specimens, and all other equipment of the College are at the service of students of this course, affording an excellent opportunity for instruction.

The work is so arranged that teachers who desire to devote all of their time to Agriculture and Nature Study can do so, while those teachers who wish to devote part of their time to Agriculture and Nature Study and part to the common branches can pursue this course.

Instruction will be offered in the following subjects, from which election may be made to best meet particular needs:

Elementary Agriculture and Nature Study, Prof. F. L. STEVENS.
School Management, Supt. Z. V. JUDD.
School Gardens, Supt. F. M. HARPER.
Farm Crops, Prof. C. L. NEWMAN.
Farm Animals, Prof. J. C. MCNUTT.
Horticulture, Prof. F. C. REIMER.
Soils, Prof. M. E. SHERWIN.
Insects, Mr. R. I. SMITH.
Poultry, Mr. J. S. JEFFREY.

Arithmetic, English, History, etc., are taught by the regular professors and instructors of the College.

No fees are charged for this course. Board may be had at $2.50 a week, and lodging at about $1 a week.

Only a limited number can be accommodated. Rooms must be engaged in advance.

For particulars and reservation, write to

F. L. STEVENS, Superintendent,
West Raleigh.

Donations.

To the Textile Department.

Whitin Machine Works, Whitinsville, Mass.—One 4x1 gingham loom.

Schaum & Uhlinger, Philadelphia, Pa.—One 200-hook five-sided cylinder jacquard.

L. T. Houghton, Worcester, Mass.—Steel thread boards for four spinning frames.

G. M. Parks Company, Fitchburg, Mass.—Sample Turbo humidifyer head.

H. Heinze, New York.—One straight sample cloth-cutting knife; half-price sample cutting machine.

W. H. Bigelow, Charlotte, N. C.—Card clothing.

Hampton Manufacturing Co., Easthampton, Mass.—Mercerized cotton yarns.

E. H. Jacobs Manufacturing Co., Danielson, Conn.—Pickers, loops, lug straps for loom.

Allis-Chalmers Company, Milwaukee, Wis.—One one-half h. p. motor for loom.

U. S. Department of Agriculture.—Standard grades of cotton.

J. Spencer Turner Co., New York.—Sample duck cloths.

Kitson Machine Shops, Lowell, Mass.—One thread extractor.

Eugen C. Andres & Co., Boston, Mass.—Cotton samples.

Taylor Instrument Co., Rochester, N. Y.—One Hygrodeik.

Durbrow & Hearne, New York.—Sample cutting machine.

Steel Heddle Mfg. Co., Philadelphia.—Three thousand 12-inch heddles.

Textile Manufacturer, Charlotte, N. C.

Mill News, Charlotte, N. C.

Southern Textile Bulletin, Charlotte, N. C.

Wool and Cotton Reporter, Boston, Mass.

Fibre and Fabric, Boston, Mass.

New York Commercial, New York.

Kallé & Co., New York.—Collection of dyestuffs and pattern cards.

Cassella & Co., New York.—Collection of dyestuffs and pattern cards.

Farbenfabriken of Elberfeld Co., New York.—Collection of dyestuffs and pattern cards.

H. A. Metz & Co., New York.—Collection of dyestuffs and pattern cards.

Leisel Color Co., Greensboro, N. C.

To the Department of Mechanical Engineering.

Edwin Harrington Son and Co., Philadelphia.—One-half ton chain hoist.

The Chisholm & Moore Manufacturing Co., Cleveland, Ohio.—One-half-ton chain hoist.

Wright Manufacturing Co., Lisbon, Ohio.—One-half-ton chain hoist.

Arcade Manufacturing Co., Freeport, Ill.—A Model molding machine, and a Squeezer molding machine.

Henry Pridmore, Chicago, Ill.—A molding machine.

The Falls Rivet and Machine Co., Cuyahoga Falls, Ohio.—A Wadsworth core-making machine.

The Goulds Manufacturing Co., Seneca Falls, N. Y.—A number six hydraulic ram.

Motsinger Device Manufacturing Company—A D. C. magneto for gasoline engine.

H. Belfield Company, Philadelphia—Samples of Globe valves.

Warren Webster & Co., Camden, N. J.—Samples of radiator valves.

Many handbooks, catalogues, bulletins from companies, for class use.

A number of magazines.

To the Agricultural Department.

Syracuse Plow Company, Syracuse, N. Y.—A road machine.

King Weeder Company, Richmond, Va.—Broadcast lime and fertilizer distributor.

John Deere Company, Baltimore, Md.—Subsoil plow.

W. J. Olive Plow Company, Knoxville, Tenn.—Subsoil plow.

Blue Ridge Lime Company, Asheville, N. C.—Car ground limestone.

Mr. C. A. Williams, Ringwood, N. C.—Two and one-half bushels of Cook's Improved cotton seed.

Fairbanks Scale Co., Baltimore, Md.—14′ by 8′ wagon scales.

To the Animal Husbandary Department.

Percheron Society of America, Chicago, Ill.—Percheron Stud Book of America (7 volumes).

The American Jersey Cattle Club, New York.—Jersey Herd Book (18 volumes)

S. R. Feil Co., Cleveland, Ohio.—One three-hundred-pound barrel medicated salt.

Quaker Oats Co., Chicago, Ill.—Two hundred pounds Schumacher calf meal, and five hundred pounds Banner mule feed.

Ayrshire Breeders' Association.—Three pictures of the Ayrshire cattle.

Holstein Friesian Association of America, Brattleboro, Vt.—Holstein Friesian Herd Book, volume XXVIII.

American Shorthorn Breeders' Association, Chicago, Ill.—Shorthorn Herd Book, volumes 75 and ——.

The Sharples Separator Company, West Chester, Pa.—Replaced 1908 model separator with a 1910 machine.

To the Library.

Dr. William A. Syme.—Books on chemistry (33 volumes).

Dr. George Summey.—Bryan's *Famous Orations* (10 volumes).

Dr. George Summey.—*A Southerner in Europe*, by Clarence H. Poe.

Edward Goodrich Acheson (author).—*A Pathfinder.*

Prof. C. L. Newman.—Jefferson's *Parliamentary Practice.*

G. W. F. Harper (author).—*Caldwell County in the Great War, 1861-65.*

Logan G. McPherson (author).—*Transportation in Europe.*

Geo. L. Raymond (author).—*Fundamentals of Education, Art and Civics.*

Herbert N. Casson (author).—*History of the Telephone.*

Edwin Durning-Lawrence (author).—*Bacon is Shakespeare.*

To the Chemical Department.

The Braun Corporation, Los Angeles, Cal.—One copy of Smith's *Modern Assaying.*

George F. Syme, administrator.—The apparatus and chemicals of the private laboratory, and the following books from the library, of the late Dr. William Anderson Syme:

Austin, Peter T.—*Notes for Chemical Students.*

Bailey, L. H.—*Plant Breeding.*

Caldwell, G. C.—*Elements of Qualitative and Quantitative Chemical Analysis.*

Cohen, Julius B.—*Practical Organic Chemistry for Advanced Students.*

Cooley, Leroy C.—*Laboratory Studies in Elementary Chemistry,* and *The Physics Student's Manual.*

Drechsel, Phil. Edmund, Dr.—*Introduction to the Study of Chemical Reaction.*

Gatterman, Phil. Ludwig, Dr.—*Die Praxis Des Organischen Chemikers.*

Geikie, Archibald.—*Physical Geography.*

Gray, Asa.—*Elements of Botany*, and *Manual of the Botany of the Northern United States.*

Grossman, J.—*Ammonia and Its Compounds.*

Hjelt, E., Prof.—*Principles of General Organic Chemistry.*

Hummel, J. J.—*The Dyeing of Textile Fabrics.*

Huxley, Thomas H.—*Lessons in Elementary Physiology.*

Jones, Harry C.—*Elements of Physical Chemistry, Electrical Nature of Matter and Radioactivity*, and *Freezing-point, Boiling-point, and Conductivity Methods.*

Ladd, E. F.—*Manual of Quantitative Chemical Analysis.*

Mason, William P.—*Examination of Water.*

Meyer, Lothar.—*Outlines of Theoretical Chemistry.*

Newell, Lyman C.—*Experimental Chemistry*, and *Teacher's Supplement* to accompany the *Experimental Chemistry.*

Noyes, Arthur A.—*Qualitative Chemical Analysis.*

Orndorff, W. R.—*Laboratory Manual of Organic Chemistry.*

Peabody, James Edward.—*Studies in Physiology, Anatomy and Hygiene.*

Pictet, Ame, Dr., and Biddle, H. C.—*Vegetable Alkaloids.*

Remsen, Ira, and Randall, Wyatt W.—*Chemical Experiments.*

Roscoe, H. E., Sir.—*Chemistry*, in *Science Primers* series.

Sedgwick, William T., and Wilson, Edmund B.—*Introduction to General Biology.*

Stewart, Balfour.—*Physics*, in *Science Primers* series.

Storer, F. H., and Lindsay, W. B.—*Elementary Manual of Chemistry.*

Talbot, Henry P.—*Quantitative Chemical Analysis.*

Thornton, Arthur, and Pearson, Marchant.—*Notes on Volumetric Analysis.*

Tyndall, John.—*Forms of Water.*

Venable, F. P.—*Short History of Chemistry.*

Volhard, Jacob, and Zimmerman, Clemens.—*Experiments in General Chemistry.*

Waddell, John.—*Arithmetic of Chemistry.*

Warington, R.—*Chemistry of the Farm.*

Witthaus, R. A.—*Laboratory Guide in Urinalysis and Toxicology.*

Wright, John S.—*Pharmacology of the Fluid Extracts in Common Use.*

To the Rural Science Club.

These donations are given as prizes to the students that are most active in club work:

The Oaks Manufacturing Company, New Bern.—A combined corn planter and fertilizer distributor.

J. Van Lindley Nursery Company, of Pomona.—Fifty Kieffer pear trees.

Rawlings Implement Company, Baltimore, Md.—One fourteen-tooth steel Kind barrow.

D. C. Lytch, Laurinburg, N. C.—One "Eclipse" cotton planter.

B. F. Avery & Co., Louisville, Ky.—One steel double-tree.

Catalogue of Students.

Graduates.

Name.	*Post-office.*	*Course.*
Thomas Kincaid Bruner, B.E.,	Raleigh,	Tex.
John Washington Clark, B.E.,	Raleigh,	Tex.
Lewis Reinhold Detjen, B.S.A.,	West Raleigh,	Agr.
James Leonidas Dunn, B.S.,	Scotland Neck,	Agr.
Lovic Rodgers Gilbert,	Raleigh,	Tex.
John William Harrelson, B.E.,	Lawndale,	M.E.
Leonard Henderson, B.E.,	Salisbury,	C.E.
Daniel Harvey Hill, Jr., B.S.,	West Raleigh,	Chem.
William Fland Morris, B.E.,	Ashboro,	M.E.
Warren Carney Norton, Ph.B.,	Portland, Me.,	Agr.
William Franklin Pate,	West Raleigh,	Chem.
Francis Webber Sherwood, B.S.,	Raleigh,	Chem.
Thomas Barnes Stansel, B.S.,	Allenton,	Chem.

Senior Class.

William Bailey,	Raleigh,	E.E.
Tollie Chester Barber,	Pinnacle,	Tex.
Carson Devane Baucom,	Raleigh,	E.E.
John Mann Beal,	Rocky Mount, R. 3,	Agr.
Charles Edward Bell,	Kinston,	Chem.
John Benjamin Bray,	Sligo,	C.E.
Joel Edward Brown,	Pendleton, S. C.,	Agr.
James Howard Brown,	Charlotte, R. 4,	Agr.
William Bachman Brown,	Glass,	C.E.
Guy Kedar Bryan,	Tampa, Fla.,	C.E.
Kit Bryan,	Catherine Lake, R. 1,	C.E.
Von Porter Byrum,	Charlotte,	M.E.
Henry Roy Cates,	Swepsonville,	Agr.
Henry Caleb Clay,	Hickory,	M.E.
John Downie Cooper, Jr.,	Henderson,	Tex.
Charles Lee Cruse,	Salisbury,	Agr.
William Hurd Davis,	Marshville, R. 1,	E.E.
Roscoe Walter Dent,	Lehigh, Pa.,	M.E.
Edwin Sexton Dewar,	Raleigh,	Chem.
John Ivey Eason,	Stantonsburg, R. 1,	Agr.
Earl Montier Evans,	Raleigh,	M.E.

Name.	*Post-office.*	*Course.*
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George William Gillette,	Marines,	E.E.
Robert Walter Græber,	Concord,	Agr.
Thomas Devin Harris,	Oxford,	C.E.
David Raymond Hinkle,	Lexington,	Tex.
Eugene Richard McCracken,	Graham,	Tex.
Sidney McDonald,	Wilmington,	C.E.
Charles McKimmon,	Raleigh,	Chem.
Jacob Lee Martin,	Graham,	C.E.
Robert Lee Morrison,	Concord,	C.E.
Fred Taylor Peden,	Wilkesboro,	Agr.
John Taylor Peden, Jr.,	Wilkesboro,	E.E.
Paul Nathaniel Pittenger,	Raleigh,	E.E.
Josephus Plummer Quinerly,	Grifton,	Agr.
John Wesley Rollinson,	Elizabeth City,	E.E.
George Romulus Ross,	Ashboro,	Agr.
Graeme Ross,	Charlotte,	E.E.
James Morgan Sherman,	Ash Grove, Va.,	Agr.
Ira Short,	Boardman,	M.E.
Orin Morrow Sigmon,	Hickory,	M.E.
Charlie Augustine Speas,	Cana, R. 2,	C.E.
Herbert Nathaniel Steed,	Steeds,	Tex.
Lucius Esek Steere, Jr.,	Charlotte,	E.E.
Lloyd Hurst Swindell,	Raleigh,	Tex.
Thomas Whitmell Thorne,	Littleton,	M.E.
Fred Goode Tucker,	Henderson,	C.E.
Edwin Thomas Wadsworth,	Charlotte,	E.E.
James Hunter Watson,	Raleigh,	Chem.
Walter Booker Winfree,	Wadesboro, R. 3,	Agr.
Marion Fuller Wyatt,	Raleigh,	M.E.

Junior Class.

Neily Ormond Alexander,	Matthews, R. 17,	Agr.
Thomas Roper Baldwin,	Mount Gilead,	Tex.
Allison Hodges Bond,	Fayetteville,	M.E.
Alan Thurman Bowler,	Sanford, Fla.,	C.E.
Clayton Edward Brown,	Chocowinity,	C.E.
Brice Legrier Caldwell,	Concord,	Chem.
Ralph Campbell Deal,	Concord,	E.E.
Ernest Cofield Derby,	Rocky Mount,	C.E.
McNeely DuBose,	Morganton,	E.E.
Percy Bell Ferebee,	Elizabeth City,	E.E.

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Nevin Gould Fetzer,	Concord,	Chem.
Thomas Fenner Gibson,	Red Springs,	C.E.
Richard Giersch,	Raleigh,	E.E.
William Haywood Graham, Jr.,	Rowland,	E.E.
Charles Ganzer Hall,	Wilmington,	Tex.
Robert McKenzie Hardison,	Morven,	C.E.
Harry Hartsell,	Asheville,	E.E.
Willis Askew Holding,	Raleigh,	Chem.
Carl Horn,	Rutherfordton,	Tex.
Samuel Benjamin Howard,	Morganton,	M.E.
Ralph Wilkinson Howell,	Belhaven,	Agr.
Harvey Langill Joslyn,	Farm School,	Agr.
John Gordon Kellogg,	Sunbury,	Agr.
Sam Jones Kirby,	Selma, R. 1,	Agr.
Carl Joshua Lambeth,	Thomasville,	M.E.
Curtis Williams Lee,	Monroe,	M.E.
Nathan Wilson Legrand,	Rockingham,	E.E.
Thomas Pinkney Lovelace,	Henrietta,	E.E.
James Edward McGee,	Mt. Olive,	Tex.
Thomas Hunt Mackie,	Yadkinville,	E.E.
Neill McQueen,	Fayetteville,	Tex.
Walter Ray Mann,	Aberdeen,	Agr.
Henry Bascom Mercer,	Wilmington,	C.E.
Simon Turner Mitchiner,	Garner,	M.E.
James Richard Mullen,	Charlotte,	Chem.
Harry Peachy Murray,	Charlotte,	E.E.
Charles McKee Newcomb,	Raleigh,	C.E.
Charlie Washington Owens,	Saratoga, R. 1,	C.E.
Alexander Holladay Pickel,	Raleigh,	E.E.
Bryant Monroe Potter,	Southport,	C.E.
Wade Hampton Reinhardt,	Stanley,	Agr.
Louis Napoleon Riggan,	Raleigh,	C.E.
Archie Knight Robertson,	Rowland,	Agr.
David Walter Seifert,	New Bern,	C.E.
Fleming Bates Sherwood,	Raleigh,	Chem.
William Talmage Shull,	Beaufort,	C.E.
James McCree Smith,	Rutherfordton,	Agr.
Orus Wilder Smith,	Kipling,	M.E.
Edward Pinkney Speer,	Boonville,	E.E.
Talmage Holt Stafford,	West Raleigh,	Agr.
Clarence Alexander Stedman,	Greensboro,	Chem.
Needham Bryan Stevens,	Goldsboro,	Agr.

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David Bruce Sturgill,	Piney Creek,	C.E.
Morgan Frankin Sugg,	Kinston,	Tex.
William Perry Sugg,	Princeton,	C.E.
Arthur Willis Taylor,	Raleigh,	M.E.
Culver Murat Taylor,	Tarboro,	E.E.
Herbert Lee Taylor,	Raleigh,	M.E.
George Logan Thompson,	Goldsboro,	E.E.
John Sam Thompson,	Lewiston,	Agr.
George Reid Trotter,	Charlotte,	E.E.
Harry Moore Walton,	Morganton,	E.E.
Hugh Powell Whitted,	Mebane,	C.E.
Wallace Woodson Williams,	Raleigh,	Chem.

Sophomore Class.

Derbin Linwood Allen,	Wake Forest,	M.E.
Lewis Allen Ammon,	Marshall, R. 4,	Agr.
Charles Sidney Andrews,	Kinston,	M.E.
Gilbert Luther Arthur, Jr.,	Morehead City,	Chem.
Charles Albion Bache,	Live Oak, Fla.,	E.E.
Roger Moore Bailey,	Elm City,	Agr.
Grady Lee Bain,	Greensboro,	C.E.
Rany Baynes,	Bushy Fork,	E.E.
William Hunter Bingham,	Concord,	E.E.
William Edward Blair, Jr.,	Buffalo, N. Y.,	Agr.
William Leslie Bloomer,	Old Fort,	E.E.
Edwin Dennis Bowditch,	Toecane,	Agr.
Rodney Law Boylin,	Wadesboro,	Agr.
John Warren Bradfield, Jr.,	Charlotte,	M.E.
George Wallace Brice,	Charlotte,	E.E.
Herman Burke Briggs,	West Raleigh,	M.E.
Stephen Cole Bruner,	Raleigh,	Agr.
Irwin Clark,	Scotland Neck,	E.E.
Amos Baxter Clement,	Oxford, R. 1,	E.E.
William Randolph Clements,	Raleigh,	E.E.
Thomas Alexander Cole,	Cole's Mills,	Agr.
John Burke Coward,	Webster,	E.E.
James Franklin Crowell,	Concord,	Agr.
Liston Lloyd Dail,	Chinquapin,	Chem.
Maxey Ulam Daniel,	Roxboro,	E.E.
Paul Dexter Davis,	Fremont,	C.E.
John Jennings Dunlap,	Wadesboro,	Agr.
Nathan Spencer Edwards,	Glenola,	Agr.

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DANIEL BURNIE FLOYD,	Fairmont,	M.E.
ELBERT JONES GARRETT,	Roxboro, R. 4,	Agr.
ROY DURANT GOODMAN,	Concord, R. 2,	Agr.
CICERO FRED GORE,	Wilmington,	C.E.
WILLIAM HENRY GRIFFIN, JR.,	Goldsboro,	C.E.
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FELIX STANTON HALES,	Wilson,	C.E.
LEROY CORBETT HAND,	Chadbourn,	Tex.
JACK WILSON HARDIE,	Brown Summit, R. 2,	M.E.
HENRY SPOONER HARRISON, JR.,	Enfield,	Agr.
THOMAS ROY HART,	Monroe,	Tex.
EARNEST ECCLES HEDRICK,	Lexington,	Tex.
THOMAS JASPER HEWITT,	New Bern,	C.E.
RILEY WEAVER HIGGINS,	Leicester, R. 1,	Agr.
PETER ARMSTRONG HOLT,	Graham,	Agr.
WALTER CLEARY HOPKINS,	Newport News, Va.,	C.E.
FRANK HENRY HOUCK,	Hickory,	C.E.
ERNEST BOYD HUNTER,	Charlotte,	C.E.
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DOUGLASS CREELMAN JEFFREY,	West Raleigh,	C.E.
JAMES WRIGHT JOHNSON,	Garland,	E.E.
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JOSEPH DREWRY JOYNER,	Franklinton,	E.E.
SIR KEITH KELLER,	Lilesville,	C.E.
GEORGE EDISON KIDD,	Charlotte,	E.E.
JOHN RAYMOND KIKER,	Polkton, R. 2,	Agr.
LOUIS BRASWELL KNIGHT,	Tarboro, R. 1,	Agr.
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NATHAN SAMPSON LACHICOTTE,	Waverly Mills, S. C.,	Agr.
WILLIAM CORNELIUS LASSITER,	Potecasi,	Tex.
EDGAR CLARK LATHAM,	Plymouth,	E.E.
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Richard Eastwood Page,	Biscoe,	M.E.
Paul Paris,	North Wilkesboro,	E.E.
James Marcus Parker,	Lasker,	Agr.
Walter Herbert Parker,	Rocky Mount,	M.E.
Thad Rowland Parrish,	Middleburg,	E.E.
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Thomas Hector Purcell,	Maxton,	Tex.
Henry Aubrey Quickel,	Lincolnton,	Tex.
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James Charles Small,	Elizabeth City,	Agr.
Richard Henry Small,	Norfolk, Va.,	C.E.
Francis Clark Smith,	New Bern,	C.E.
Frank Steed Smith,	Greensboro,	M.E.
Colin George Spencer,	Ashboro,	Agr.
John Brown Steele,	Yadkin Valley,	Agr.
William Beaver Stover,	Granite Quarry,	E.E.
Charlie Berryhill Stowe,	Charlotte, R. 4,	Agr.
Nathaniel Henry Street, Jr.,	New Bern,	Tex.
William Henry Sullivan,	Greensboro,	C.E.
Stanton Banks Sykes,	Efland, R. 2,	E.E.
Robert Moore White,	Norlina,	Tex.
Alvin Chesley Wilson,	Raleigh,	E.E.

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Leander Jasper Andrews,	Robersonville,	E.E.
Graham Hudson Anthony,	Shelby,	M.E.
Bascum Otto Austin,	Charlotte,	E.E.
Walton Avery,	Morganton,	C.E.
Clare Russell Bailey,	Chadbourn,	Agr.
Hugh Bailey,	Woodleaf,	Agr.
Ernest Bohannon Baity,	Courtney,	Agr.
Richard Griffin Ball,	Raleigh,	C.E.

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Fisher Jones Beasley,	Louisburg,	M.E.
Herman Von Biberstein,	Charlotte,	C.E.
Enos Clarkson Blair,	Raleigh,	Agr.
Thomas Harvey Blount, Jr.,	Washington,	E.E.
William Clement Boren, Jr.,	Pomona,	M.E.
Julian Chisolm Brantley,	Spring Hope,	Agr.
Victor Winfred Breeze,	Durham,	C.E.
Charley Meekins Brickhouse,	Columbia,	Agr.
William Skyler Britton,	Winton,	Tex.
James Ramsey Buchanan,	Dillsboro,	E.E.
Harley Wilson Bullard,	Chadbourn,	Agr.
Henry Burleson,	Plumtree,	E.E.
George Dowell Burroughs,	Everett,	Agr.
Robert Olin Caldwell,	Concord,	Agr.
Walter Graham Caldwell,	Huntersville,	Agr.
William Buchanan Calhoun,	Laurinburg,	Agr.
James Albright Chambers,	Asheville,	C.E.
Edward Lamar Cloyd,	Lenoir,	M.E.
Edwin Lacy Coble,	Greensboro,	Agr.
Samuel Brady Coley,	Wilson,	C.E.
Burtis O. Cone,	Spring Hope,	Agr.
Howard Milton Cool,	Cleveland, Ohio,	Agr.
Clifton Converse Courtney,	Goldsboro,	E.E.
David Davies Cox,	Cullowhee,	M.E.
St. John Cox,	Cullowhee,	M.E.
Leland Moit Craig,	Charlotte,	M.E.
Franklin Lee Crawford,	Winston-Salem,	Agr.
Woodfin Grady Credle,	Swan Quarter,	Agr.
William Edward Crosland,	Rockingham,	Agr.
Robert Dellinger Crowder,	Shelby,	C.E.
Frank Lee Crowell,	Charlotte,	Agr.
William Ramsey Culbertson,	Woodleaf,	E.E.
Samuel Frederick Davidson,	Swannanoa.	Agr.
Enoch McKnight Deaton,	Mooresville,	Agr.
Brownugg Heffenon Dewey,	Goldsboro,	M.E.
Hallowell Dickinson,	Goldsboro,	E.E.
Gaston Lewis Dortch,	Goldsboro,	Agr.
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William Robert Everett,	Palmyra,	Agr.

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Karl McArtee Fetzer,	Reidsville,	E.E.
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William Benjamin Foster,	Winston-Salem,	M.E.
James Roscoe Franck,	Richlands,	Agr.
Roger Jerome Franklin,	Winston-Salem,	Agr.
Eckie Haywood Gattis,	Raleigh,	Agr.
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Bost Sanders Greene,	Harrisburg,	Tex.
John Wesley Griffith,	Winston-Salem,	E.E.
Winston Payne Gwathmey,	Richmond, Va.	C.E.
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William Snelling Hicks,	Raleigh,	Chem.
Roney Melton High,	Kenly,	E.E.
Earl Brison Hockett,	Pleasant Garden,	Agr.
Hubert Royster Holding,	Raleigh,	Agr.
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William Bruce Hutchison,	Charlotte,	Agr.
Aston Jensen,	Asheville,	Agr.
William Leon Jewell,	Wilmington,	C.E.
Lacy John,	Lumber Bridge,	Agr.
Willis Neal Johnston,	Mooresville,	M.E.
Charlie Cook Kearney,	Franklinton,	Agr.
Charles Martin Kephart,	Ashboro,	E.E.
Mack Allen Killebrew,	Penelo,	Agr.
John Lindon Knox,	Town Creek,	Agr.
Archie Rhem Lane,	Hertford,	M.E.
William Albert Lane,	Goldsboro,	M.E.
Douglas Allen Leard,	Raleigh,	C.E.
Edgar Giles Lee,	Wilson,	E.E.
Hugh Shaw Lee,	Raleigh,	Chem.
Lawrence Tyson Lee,	Raleigh,	Chem.
Walter Porcher Lee,	Darlington, S. C.	Chem.
Fred Bennett Leggett,	Wadesboro,	Agr.
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Robert Russell McIver,	Sanford,	Agr.
Millard Filmore McKeel, Jr.,	Washington,	C.E.
James Edgar McNeely,	Mooresville,	M.E.
Harvey Campbell McPhail,	Mount Olive,	Agr.
Sherrod Ervin Menzies,	Hickory,	M.E.
Joseph Edward Michael,	Gibsonville,	Agr.
Maurice Emory Miller,	Salisbury,	C.E.
Joseph Gordon Monger,	Sanford,	E.E.
Thomas Guy Monroe,	Eagle Springs,	Agr.
Warren Lafayette Moody,	Concord,	Chem.
Otis Corcoran Moore,	Bennettsville, S. C.,	E.E.
Errol DeWitt Morton,	Roxboro,	Agr.
Frank Bullock Morton,	Townsville,	M.E.
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Edward Napoleon Murray,	Fairfield,	Agr.
Henry Kollock Nash, Jr.,	Wilmington,	Agr.
Julius Isaac Neal,	Madison,	Agr.
Thomas Winston Nicholls,	Edenton,	E.E.
Edgar Byron Nichols,	Mt. Airy,	M.E.
Herbert Burns Norris,	Raleigh,	M.E.
Curtis Elmo Overton,	Columbia,	E.E.
Lee Raboteau Page,	Aberdeen,	Agr.
Peyton Hogue Park,	West Raleigh,	C.E.
John Charles Parkin,	Trinity,	Agr.
Mercer Cranor Parrott,	Kinston,	C.E.
Fitzgerald Elizur Patton,	Pisgah Forest,	Agr.
Will Robert Patton,	Morganton,	C.E.
Milton Vance Perry,	Durant's Neck,	M.E.
Henry Marriott Philips,	Battleboro,	Agr.
Arthur Jefferson Phillips, Jr.,	Portsmouth, Va.	M.E.
Joseph Jennings Phillips,	Portsmouth, Va.	C.E.
Robert Avery Plyler,	Monroe,	E.E.
Henry Marion Pope,	Durham,	M.E.
Tracy W. Porter,	Charlotte,	Agr.
William Owen Potter,	Cash Corner,	E.E.
Charles London Proffit,	Bald Creek,	Agr.

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Millard Reed Quinerly,	Grifton,	Agr.
John Bartow Rees,	Lincolnton,	E.E.
Bennie Drew Robbins,	Southport,	M.E.
Thurman Lester Roberson,	Robersonville,	M.E.
Chauncey Hardwick Roberts,	Fletcher,	M.E.
Daniel Ernest Roberts,	Red Springs,	Agr.
John Morgan Roberts,	Louisville, Ga.	Agr.
Davis Aydelotte Robertson,	Portsmouth, Va.	Agr.
Joe William Ross,	Fort Mill, S. C.,	Agr.
Emory Pell Rouse,	LaGrange,	E.E.
Robbie Wendell Sanders,	Smithfield,	M.E.
John Franklin Schenck, Jr.,	Lawndale,	E.E.
William Thomas Shaw, Jr.,	Weldon,	Tex.
Price Elias Sherrill,	Mt. Ulla,	Agr.
Walter Herbert Smith,	Prospect Hill,	E.E.
Whitefoord Ingersoll Smith,	Asheville,	Tex.
Robert Edgar Stevens,	Goldsboro,	E.E.
Roy Clinton Stockwell,	Raleigh,	Chem.
Redding Stancill Sugg,	Rocky Mount,	Agr.
Loyd Erskine Sutton,	Monroe,	E.E.
Ray Sutton,	LaGrange,	E.E.
Daniel McGilvary Tate,	Littleton,	M.E.
Zeb Whitehurst Taylor,	Tarboro,	E.E.
Arthur Lee Teachey,	Teachey,	Agr.
Daniel Wood Thorp, Jr.,	Rocky Mount,	C.E.
James Richard Townsend,	Greensboro,	C.E.
Thomas Settle Tucker,	Fair Bluff,	C.E.
Elbert Moye Tyson,	Greenville,	Agr.
Logan Henderson Umstead,	Stem,	Agr.
Clyde Loreine Vann,	Fayetteville,	E.E.
William Henry von Eberstein,	Chocowinity,	Agr.
Edward William Waldroup,	Hayesville,	E.E.
James Hugh Ward,	Macclesfield,	C.E.
James Wiggins Watts, Jr.,	Williamston,	E.E.
Edward Hoverton Weatherspoon,	Sanford,	E.E.
Leslie Devlin Weeks,	Charlotte,	E.E.
Don Clair Whitley,	Albemarle,	Agr.
Richard Fleet Williams,	Hiddenite,	Agr.
Daniel Grady Wilson,	Linwood,	Agr.
Owen Zelotes Wrenn,	Durham,	C.E.
Clem C. Yarbrough,	Locust Hill,	M.E.
Elisha Thomas Yates,	Boomer,	Agr.

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Richard Becton Yelverton,	Fremont,	E.E.
Roy Lee Yelverton,	Fremont,	E.E.
Lemuel Gaston Yerby,	West Raleigh,	Agr.
Arch Columbet Yow,	Greensboro,	Agr.

IRREGULAR.

Maurice Fels Poole,	Randleman,	Agr.
Fred Barnett Wheeler,	Archdale,	M.E.

TWO YEAR COURSES.

First Year.

Jasper Fredric Arnold,	Lynn,	M.A.
Ralph Theodore Beck,	Germanton,	M.A.
Clarence Edmonson Berry,	Bennettsville,	M.A.
Edward Sidney Blount,	Roper,	M.A.
Overby Murrell Boaze,	Franklinton,	M.A.
Clarence Hedrick Clark,	Chapel Hill,	Tex.
Aubrey Clayton Doggett,	Brown Summit,	M.A.
Walter Harold Gandy,	Society Hill, S. C.	M.A.
Onyx Crawford Harris,	Franklinton,	M.A.
Henry Mercer Harshaw,	Murphy,	M.A.
Jesse Frank Huette,	Thomasville,	M.A.
Lona Alvin Jaynes,	Fonta Flora,	M.A.
Wiley Gray Johnson,	Germanton, R. 1,	M.A.
Durwood Belmont Kearney,	Franklinton,	M.A.
Fabius Henry Kohloss,	Columbia,	M.A.
Lola Rone Leffers,	Gloucester,	M.A.
Charles Duncan McIver,	Greensboro,	Tex.
Roy Kilpatrick McNeely,	Mooresville,	M.A.
Pierre Mallett,	Etowah,	M.A.
William Hood Manly,	Goldsboro,	M.A.
Albert Caldwell Morrison,	Charlotte,	M.A.
William Victor Pearsall,	Wilmington,	M.A.
John Samuel Pickett,	High Point,	Tex.
Fred Murray Poyner,	Moyock,	M.A.
Fred Lee Roland,	Casida,	M.A.
James Baxter Sarratt,	Charlotte,	Tex.
John Franklin Smith,	Wilmington,	M.A.
Noah Winston Smitherman,	Troy,	Tex.
Charlie Goodrich Snow,	Hillsboro,	Tex.
Clarence Elmer Stone,	Pinnacle,	M.A.

10

Name.	*Post-office.*	*Course.*
John Thompson,	Thomasville,	Tex.
Theo Thompson,	Norwood,	M.A.
William Cobb Toler,	Goldsboro,	M.A.
Edgar Donnald Williams,	Greensboro, R. 3,	M.A.
Francis Hall Wrightson,	Easton, Md.,	M.A.

Second Year.

Clarence Loe Underwood,	Newton Grove,	M.A.
Mebane Strange White,	Mebane, R. 3,	M.A.
Heber Jourdin Wilkinson	Belhaven,	M.A.
Charles Conley Wilson,	Morganton, R. 1,	M.A.

ONE YEAR COURSE IN AGRICULTURE.

Andrew Tazewell Baird, Jr.,	Society Hill, S. C.
John Marshall Cobb,	Atkinson.
John Walter Bullock,	Rowland.
William Scrivner Coggin,	Palmerville.
Pierce Butler Day, Jr.,	Trenton, S. C.
Johny Deal,	Taylorsville.
Robert Clarence Dixon,	Lowell.
James Robert Everett,	Williamston.
Benjamin Frank Gaitley,	Rowland.
John Burt Exum, Jr.,	Fremont.
Grover Cleveland Glenn,	Arden.
Frank Odgen Hartshorn,	Asheville.
Robert Ward Johnson,	Plymouth.
Rhoderic Houston Kennedy,	Houstonville.
Junius Irvin King,	Belham.
William Closs Knox,	Town Creek.
LeRoy Vernon Leitch,	Rowland.
Junius Jacob Little,	Wadesboro.
William John Belk McNeely,	Waxhaw.
Willie Oscar Manning,	Parmele.
Latimer Briggs Neal,	Mizpah.
Charles Warfield Palmer,	Elkton, Va.
George Fletcher Pate,	Gibson.
Melzar Love Pearsall,	Wilmington.
Oscar Pearsall,	Wilmington.
Earl Mathew Perry,	Durant's Neck.
Jasper Earl Pippin,	Fremont.

Name.	*Post-office.*
Alfred Rowland Pittman,	Fairmont.
Sanford George Rackley,	Goldsboro.
Claudius Little Rhyne,	Gastonia.
Banks Cooper Talley,	Statesville.
Robert Green Thomas,	Cofield.
Ben Person Thorp, Jr.	Oak Hill.
Onslow Mateer Whitsett,	Greensboro.
Stephen Vance Wilkins,	Rose Hill.
Henry Hall Wilson,	Monroe.

WORK COURSE—AGRICULTURAL.

First Year.

Jere Wilson Bason,	Swepsonville.
Reuben Henry Comer,	Dobson.
Lorenzo Lamar Davis,	Marshville, R. 1.
Garland Lamar Dellinger,	Conover.
Adlai Holt Dixon,	Haw River, R. 1.
Robert Bruce Donaldson,	Charlotte, R. 8.
Cicero Hunter Groome,	Greensboro.
Jesse Webb Lindley,	Snow Camp.
William Ransom O'Briant,	Durham, R. 6.
Ramah Sitterson,	Roper, R. 2.
John Alexander Stilwell,	Charlotte, R. 3.
Alfred Tennyson Taylor,	McCullers, R. F. D.
Bard Alonzo Williams,	Monroe, R. 1.
Samuel Robert Williams,	Fairfield.
Lee Arrowood Willis,	Lincolnton.

Second Year.

Job Swain Barnard,	Asheville, R. 1.
Thomas Jefferson Croom,	Colly.
John Ellis Dodson,	Greensboro, R. 2.
Timothy Francis Eaton,	Cana, R. 2.
Alexander McNeill,	Wade.
Jesse Murray,	Burgaw, R. 2.
James Edwin Scott,	Haw River, R. 2.
Ralph Sharpe,	Barium Springs.
Jesse Bryan Wethington,	Grifton, R. 1.
John William Williamson,	Archer, R. 1.

WINTER COURSE IN AGRICULTURE.

Name.	*Address.*	*County.*	*State.*
Walter Daniel Aldridge,	Burlington,	Alamance,	N. C.
Alva Eddress Allen,	Neuse,	Wake,	N. C.
Thomas Jefferson Andrews,	Roanoke,	Roanoke,	Va.
Walter Ross Andrews,	Manndale,	Alamance,	N. C.
Lemuel Gibbens Barnhill,	Enfield,	Halifax,	N. C.
Emmett Clinton Black,	Harrisburg,	Cabarrus,	N. C.
William Hunt Brooks,	Jones,	Lee,	N. C.
Winfield Brown,	Hot Springs,	Madison,	N. C.
James Allen Bryant,	Milton,	Caswell,	N. C.
Ralph Tyree Bynum,	Farmville,	Greene,	N. C.
Syxie Ezra Carter,	Woodsdale,	Person,	N. C.
Tracy Gilreath Cathey,	Charlotte, R. 6,	Mecklenburg,	N. C.
Robert Paul Clark,	Belmont,	Gaston,	N. C.
Benjamine Garden Dean,	Middlesex,	Nash,	N. C.
George Grady Dixon,	Winterville,	Pitt,	N. C.
Aubry Ethridge,	Whitakers,	Edgecombe,	N. C.
Samuel Eury Fouts,	Aberdeen,	Moore,	N. C.
William Kelly Gibbs,	Reidsville,	Rockingham,	N. C.
John Early Gill,	Henderson,	Vance,	N. C.
Cornelius Theo. Goodwin,	Apex, R. 3.	Chatham,	N. C.
George Dempsey Goodwin,	Apex, R. 3.	Chatham,	N. C.
Jesse Read Green,	Beaumont,	Chatham,	N. C.
Edward Austin Guthrie,	New York,	New York,	N. Y.
John C. Hancock,	East Brady,	Clarison,	Pa.
Lucian Jeff. Hardison,	Williamston,	Martin,	N. C.
Edward Benj. Harrison,	Raleigh,	Wake,	N. C.
John William Hawkins,	Brown Summit,	Guilford,	N. C.
Lacy Oliver Hayes,	Granite Falls,	Caldwell,	N. C.
Leo Dabney Heartt, Jr.,	Raleigh,	Wake,	N. C.
William Ray Highfill,	Guilford College,	Guilford,	N. C.
George Herring Highsmith,	Currie,	Pender,	N. C.
Cicero Ulysses Hinshaw,	Greensboro, R. 6,	Guilford,	N. C.
Samuel Ross Ireland,	Faison,	Duplin,	N. C.
Koss Johnson,	Manndale,	Alamance,	N. C.
Squire Joel Jones,	Ararat,	Surry,	N. C.
George Young Kluttz,	Rockwell,	Cabarrus,	N. C.
Geo. Thos. Landsdell, Jr.,	Semora,	Caswell,	N. C.
George Castelle Leach,	Aberdeen,	Moore,	N. C.
Rodmon Edmond Lewis,	Atkinson,	Pender,	N. C.

Name.	*Address.*	*County.*	*State.*
John Mott Lindsay,	Madison,	Rockingham,	N. C.
Robert Unton Looper,	Hiddenite,	Alexander,	N. C.
Grady Lee McCubbins,	China Grove,	Rowan,	N. C.
Poly Henkel McRee,	Newton,	Catawba,	N. C.
Vann Lee Marsh,	Marshville,	Union,	N. C.
Elliott S. Millsaps,	Statesville,	Iredell,	N. C.
Joe Edward Montague,	Roxboro,	Person,	N. C.
William Henry Moore,	Roxboro,	Person,	N. C.
William Neal,	Madison,	Rockingham,	N. C.
Joseph Henry Parrish,	Coats,	Harnett,	N. C.
Gilliam Robert Paschal,	Sanford,	Lee,	N. C.
John Morgan Roberts,	Louisville,	Jefferson,	Ga.
Hallie Norman Rouse,	Rose Hill,	Duplin,	N. C.
John W. Scarborough,	Kinston,	Lenoir,	N. C.
Jack Mott Sharpe,	Statesville,	Iredell,	N. C.
John Monroe Sikes,	Peachland,	Anson,	N. C.
Earlie Smith,	Willow Springs,	Harnett,	N. C.
James Stevens,	Orbit,	Bladen,	N. C.
William B. Strickland, Jr.,	Middlesex, R. 1,	Nash,	N. C.
Franklin Wood Thorp,	Rocky Mount,	Edgecombe,	N. C.
Willis Heaton Tuttle,	Rural Hall,	Forsyth,	N. C.
Lewis William Walton,	Jacksonville,	Onslow,	N. C.
Mims Snow Ware,	Hamlet,	Richmond,	N. C.
Willis Douglass Warner,	Troy,	Montgomery,	N. C.
Hazel Plummer Webb,	Stem,	Granville,	N. C.
Carl Whitehead,	Bachelor,	Craven,	N. C.
Paul C. Williams,	Chapel Hill,	Orange,	N. C.

WINTER TEXTILE COURSE.

Robert Paul Clark,	Belmont,	Gaston,	N. C.
Samuel Alfred Lovelace,	Knoxville,	Knox,	Tenn.
Warren Sylvanus Porter,	Atlanta,	Fulton,	Ga.

NIGHT SCHOOL—TEXTILE.

J. H. Allen,	Raleigh.	M. L. McLane,	Raleigh.
J. E. Baker,	Raleigh.	Will Moody,	Raleigh.
M. T. Bennett,	Raleigh.	Joe Morgan,	Raleigh.
E. T. Brown,	Raleigh.	E. Murray,	Raleigh.
L. F. Brown,	Raleigh.	W. O. Powell,	Raleigh,
A. L. Campbell,	Raleigh.	R. E. Ragan,	Raleigh.
J. A. Elkins,	Raleigh.	A. C. West,	Raleigh.
C. E. Fitzgerald,	Raleigh.	Fred Williamson,	Raleigh.
W. A. Harvey,	Raleigh.	Roy Williamson,	Raleigh.

MAY SCHOOL FOR TEACHERS.

Names.	*Address.*
Mamie Arbold,	Cameron.
Patrick Benton Lamm,	Lucama.
Carey Clyde Branson,	Burlington, R. 7
Sarah Elizabeth Bledsoe,	Raleigh.
Annie Laura Bryan,	Moncure.
Ollie Anna Cook,	Concord.
Oscar Creech,	Castalia.
Carey Estelle Dorsette,	Siler City.
Christine Dowd,	Wallace.
James Edward Dowd,	Wallace.
Lucy Francis Edwards,	Elm City, R. 3.
Elvira Worth Foust,	Mt. Vernon Springs.
Ardee Leslie Graham,	Mt. Gilead.
Ernest Leland Green,	Lucama.
Maud Harris,	Garysburg.
Laura Olivia Huff,	East Bend.
Myra Lewis Hunter.	Raleigh.
Augusta Lemons,	Reidsville, R. 2.
Kenneth Henry McIntyre,	Holly Springs.
Flossie Belle McLean,	Eagle Springs.
Thaddeus Matthews,	Cardenas.
Paul Harris Nance,	Rocky Mount.
Annie Pearle Parker,	Knightdale, R. 1.
Minor Richardson,	Neuse.
Julia Margaret Rosey,	Pine Bluff.
Maggie Smith,	Maxton.
Sallie Campbell Smith,	Maxton.
Lydia Sorrell,	Raleigh, R. 6.
Anna Christine Stutts,	Eagle Springs.
Sallie Smith Wall,	Stoneville, R. 1.
Joseph Adolphus Williams,	Spencer.
William Larkin Winkler,	Lenoir.

SUMMARY.

By Classes.

Graduate	13
Senior	51
Junior	64
Sophomore	101
Freshman	181
Short Courses:	
Mechanic Arts, 2 years	32
Textile, 2 years	6
Agricultural, 1 year	36
Agricultural, irregular	2
Agricultural, work, 2 years	25
Agricultural, winter, 7 weeks	66
Textile, winter	3
Textile, night	18
May School, 2 weeks	32
Total	630

By Courses.

Agricultural, including short courses	290
Chemical	26
Civil Engineering	70
Mechanical Engineering, including Mechanic Arts	94
Electrical Engineering	93
Textile, including short courses	57
Total	630

Twenty-first Annual Commencement.

May 31, 1910.

DEGREES CONFERRED.

BACHELORS OF SCIENCE.

In Agriculture.

Thomas Johnson Brevard.
James Leonidas Dunn.
James Miller Gray,
Lyda Alexander Higgins.
Ulphian Carr Loftin.
Frank Neely McDowell.
Lennox Polk McLendon.
Harry Yeomans Mott.
St. Julian Lachicotte Springs.

In Chemistry.

Earle Aloysius Seidenspinner.
Thomas Barnes Stansel.

BACHELORS OF ENGINEERING.

In Civil Engineering.

Thomas Sawyer Bond.
Elton Elroy Buck.
Thomas Theodore Dawson.
James Jervey Gantt.
Edmund Burke Haywood.
Louie Lee Hood.
Robert Frank Jones.
Luther Hill Kirby.
Mark Clinton Lassiter.
Eugene Talmage Lee.
Jay Frederick Robinson.
Carl Collins Sadler.
John Waldorf Sexton.
Edwin Harrison Smith.
John Francis Speight.
Edward Leigh Winslow.

In Electrical Engineering.

Robert Kenneth Babington.
Fred McCullough Black.
Roy Bowditch.
Carl Ray Bradley.
William Henry Crow.
William Earle Davis.
Ransom Eaton Gill.
Clyde Raymond Jordan.
William Leake Manning.
Eugene Boise Moore.
William Ransome Phillips.
James Bruce Price.
Charles Burt Stainback.
Harris Ingram Stanback.
Isaac Norris Tull.
Charles Emmette Walton.
Howard W. Welles, Jr.

In Mechanical Engineering.

Rufus Eugene Forbis.
Frank Hawks.
Rufus Williams Hicks, Jr.
Melvin Solomon Mayes.
Leon Davis Moody.
Robert Lee Morgan.
William McCormick Neale.
William Casper Pennington.
William Clark Styron.
Thomas Hampton Thompson.

In Textile Industry.

Thomas Kincaid Bruner.
Thomas Bryan Summerlin.
Frank Martin Thompson.

John Allen Arey, B.S., Course in Agriculture, Master of Science.
Percy Leigh Gainey, B.Agr., Course in Agriculture, Master of Science.
Bascombe Britt Higgins, B.S., Course in Agriculture, Master of Science.
Wayne Arington Hornaday, B.S., Course in Agriculture, Master of Science.
William Dollison Faucette, B.E., Course in Civil Engineering, Civil Engineer.
James Allan Higgs, Jr., B.E., Course in Civil Engineering, Civil Engineer.

Honors.

HONORS IN SCHOLARSHIP.

For Four Years.

C. E. Walton.

For 1909-1910.

Senior Class.

R. K. Babington.
F. M. Black.
C. R. Bradley.
J. J. Gantt.
R. W. Hicks.
L. A. Higgins.
L. H. Kirby.
U. C. Loftin.
L. D. Moody.
E. B. Moore.
H. Y. Mott.
W. M. Neale.
W. R. Phillips.
E. H. Smith.
J. F. Speight.
C. B. Stainback.
T. B. Stansel.
C. E. Walton.

Junior Class.

C. E. Bell.
J. H. Brown.
W. B. Brown,
V. P. Byrum,
R. W. Graeber.
T. D. Harris.
D. R. Hinkle.
F. T. Peden.
J. T. Peden, Jr.
J. P. Quinerly.
G. W. Ross.
Ira Short.
J. S. Wilson.

Sophomore Class.

A. H. Bond.
C. E. Brown.
McN. DuBose.
W. H. Graham.
R. M. Hardison.
J. G. Kellogg.
J. E. McGee.
B. M. Potter.
O. W. Smith.
A. W. Taylor.
C. M. Taylor.
H. L. Taylor.

Freshman Class.

E. D. Bowditch.
J. B. Coward.
P. D. Davis.
F. S. Hales.
T. J. Hewitt.
T. F. Gibson.
R. T. Melvin.
F. C. Smith.
S. B. Sykes.

First Year Mechanic Arts.

E. B. Nichols.
H. M. Pope.
T. S. Tucker.

One Year Course in Agriculture.

H. W. Bullard.

Work Course (Agricultural).

J. E. Dodson.
R. Sharpe.

Honors for Punctuality.

J. S. Barnard.
R. C. Baynes.
W. L. Bloomer.
J. P. Carter.
W. R. Clements.
J. B. Coward.
L. L. Dail.
J. R. Eaton.
R. D. Goodman.
F. Hawks.
A. P. Hobbs.
J. R. Kiker.
W. P. Lucas.
F. W. McComb.
J. E. McGee.
R. L. Mitchell.
L. D. Moody.
J. Murray.
W. T. Nixon.
T. R. Parrish.
R. J. Powell.
J. O. Rankin.
J. F. Robinson.
G. T. Rowland.
J. E. Scott.
O. W. Smith.
S. B. Sykes.
A. W. Taylor.
H. L. Taylor.
H. B. Tice.
H. W. Welles.
H. P. Whitted.

Medals Awarded.

National Association of Cotton Manufacturers, T. B. Summerlin.

Register of Alumni.

Name.	*Degree.*	*Address.*
Durant Stewart Abernethy, Civil Engineer, Southern Ry.	B.E. 1906,	Lynchburg, Va.
Leroy Franklin Abernethy, Abernethy Hardware Co.	B.Agr. 1905,	Hickory, N. C.
Nelson Adams, Farmer.	B.E. 1904,	McColl, S. C.
Haywood Lewis Alderman, Division Superintendent in Operating Department, Southern Power Co.	B.E. 1904,	High Point, N. C.
Kemp Alexander, Superintendent Acme Hosiery Mills.	B.E. 1900,	Ashboro, N. C.
William Davidson Alexander, Jr., Engineer Charlotte Contract Co.	B.S. 1899,	Charlotte, N. C.
Daniel Allen, Real Estate Dealer.	B.S. 1896,	Raleigh, N. C.
George Gilderoy Allen, Dye House, Erwin Cotton Mills.	B.E. 1906,	Cooleemee, N. C.
Leslie Lyle Allen, Cotton Merchant.	B.E. 1900,	Spartanburg, S. C.
Robert Wilson Allen, Superintendent of Schools.	B.E. 1893,	Sanford, N. C.
John Camillus App, Real Estate Agent.	B.S. 1908,	Charleston, W. Va.
John Allen Arey, M.S., 1910. Farmer.	B.S. 1909,	Elmwood, N. C.
Dorsey Frost Asbury, Leading Ordnance Draftsman, U. S. Naval Gun Factory.	B.S. 1898,	Washington, D. C.
George Page Asbury, Draftsman Bridge Engineer's Office, Norfolk and Western Railway.	B.E. 1906,	Roanoke, Va.
Samuel Erson Asbury, M.S., 1896. Assistant State Chemist.	B.S. 1893,	College Station, Tex.
Sydney Woodward Asbury, Mechanical Engineer, American Machine and Manufacturing Co.	B.E. 1904,	Charlotte, N. C.
Thomas Martin Ashe, †	B.E. 1895,	Raleigh, N. C.
Robert James Avery, Superintendent Steam Shovel, Holston River Railway Co.	B.Agr. 1905,	Church Hill, Tenn.

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†Deceased.

Name.	*Degree.*	*Address.*
ROBERT KENNETH BABINGTON,	B.E. 1910,	Charlotte, N. C.
Auditor's Office, Southern Power Co.		
OSCAR LUTHER BAGLEY, ‡	B.S. 1905,	Weldon, N. C.
Manager Coca-Cola Bottling Works.		
EUGENE CLEVELAND BAGWELL,	B.E. 1904,	Portsmouth, Va.
Assistant Engineer, Seaboard Air Line Ry.		
EDWARD PAR BAILEY,	B.E. 1904,	Wilmington, N. C.
President Wilmington Iron Works.		
FRANK OSCAR BALDWIN,	B.S. 1908,	Saltville, Va.
Chemist Mathieson Alkali Works.		
WILLIAM HERBERT DOUGHTY BANCK,	B.E. 1909,	Havana, Cuba.
Junior Engineer, U. S. Engineer's Office.		
IRA WILSON BARBER,	B.S. 1899,	Mt. Airy, N. C.
Superintendent Electric Light and Power Plant and Waterworks.		
JAMES CLAUDIUS BARBER,	B.E. 1904,	Barber, N. C.
Farmer.		
WILLIAM WALTER BARBER,	B.E. 1904,	Barber, N. C.
Farmer.		
FLETCHER HESS BARNHARDT,	B.E. 1901,	Phœnixville, Pa.
Assistant Engineer, The Phœnix Bridge Co.		
WILLIAM ALEXANDER BARRETT,	B.E. 1904,	Missoula, Montana.
Electrical Engineer, Missoula Light and Water Co.		
GEORGE FRANCIS BASON,	B.E. 1908,	Ampere, N. J.
Crocker-Wheeler Co.		
HERBERT SCANDLIN BATTIE,	B.E. 1907,	Steelton, Pa.
Pennsylvania Steel Co.		
JAMES CLAUDIUS BEAVERS,	B.Agr. 1906,	Leesburg, Va.
Superintendent Morven Park Farm.		
SIDNEY HAMILTON BECK, ‡	B.S. 1898,	Washington, D. C.
Marine Engine and Boiler Draftsman, Navy Department.		
JOHN LELAND BECTON,	B.E. 1908,	Wilmington, N. C.
With C. R. Humphreys, Civil Engineer.		
HARWOOD BEEBE,	B.E. 1908,	Spies, N. C.
Farming and Milling.		
NEEDHAM ERIC BELL,	B.S. 1906,	Auburn, Ala.
Soil Surveyor, State of Alabama.		
WILLIAM OSBORNE BENNETT, JR.,	B.E. 1901,	Maxton, N. C.
Manager Elba Manufacturing Co.		
ROBERT LINN BERNHARDT,	B.S. 1900,	Salisbury, N. C.
Secretary Salisbury Hardware and Furniture Co.		

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‡Not heard from this year.

Name.	*Degree.*	*Address.*
Leslie Graham Berry, Manager Southern Engineering Co.	B.E. 1900,	Charlotte, N. C.
John Henderson Birdsong, Chief Chemist, The National Malleable Castings Co.	B.S. 1899,	Chicago, Ill.
Joe Pittman Bivens, Engineering Department, New York and Queens Electric and Power Co.	B.E. 1907,	New York, N. Y.
James Adrian Bizzell, M.S. 1900. Assistant Prof. Soil Technology, N. Y. State College of Agriculture.	B.S. 1895,	Ithaca, N. Y.
Fred McCullough Black, Apprentice Westinghouse Electric and Manufacturing Co.	B.E. 1910,	Wilkinsburg, Pa.
Kenneth Leon Black, Engineer I. J. Smith & Co., Inc., Engineers and Contractors.	B.E. 1906,	Richmond, Va.
William Lamar Black, Southern Power Co.	B.E. 1908,	Charlotte, N. C.
John Isham Blount, C.E. 1897. Proprietor J. I. Blount & Co., and The Blount Specialty Co.	B.E. 1895,	Birmingham, Ala.
William Morton Bogart, Chief Engineer, General Fire Extinguisher Co. of Texas.	B. E. 1903,	Dallas, Tex.
Thomas Sawyer Bond, Assistant Engineer of Location, National Railways of Mexico. Home Address, Windsor, N. C.	B.E. 1910,	Estacion Buenavista. Mexico, D. F.
Leslie Norwood Boney, Architect.	B.E. 1903,	Florence, S. C.
Fred Wilhelm Bonitz, Lawyer.	B.E. 1901,	Wilmington, N. C.
Henry Emil Bonitz, Architect.	B.E. 1893,	Wilmington, N. C.
William David Boseman, Farmer with R. H. Ricks.	B.E. 1902,	Rocky Mount, N. C.
Zolly Mosby Bowden, Electrician Florida Mining Co.	B.E. 1901,	Mulberry, Fla.
Roy Bowditch, Operating Department Southern Power Co.	B.E. 1910,	Charlotte, N. C.
Asa Gray Boynton, ‡ Landscape Engineer Vanderbilt Estate.	B.E. 1908,	Biltmore, N. C.
Carl Ray Bradley, Electrical Engineer in Motor Engineering Department, Wagner Electric Manufacturing Co.	B.E. 1910,	St. Louis, Mo.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*
James Washington Brawley,	B.S. 1895,	Greensboro, N. C.
Agency Director, Southern Life and Trust Co.		
Thomas Johnson Brevard,	B.S. 1910,	St. Paul, Minn.
Twin City Transportation Co.		
Benjamin Alexander Broom,	B.E. 1905,	Riverside, Ill.
D. H. Burnham & Co., Architects.		
Cecil DeWitt Brothers, ‡	B.E. 1909,	Knight's Key, Fla.
Florida East Coast Railway, Pigeon Key Camp.		
Bedford Jethro Brown,	B.E. 1901,	Charlotte, N. C.
Meter Expert Southern Power Co.		
Frank Hamilton Brown,	B.Agr. 1908,	Cullowhee, N. C.
Teacher of Science Cullowhee Normal and Industrial School.		
Thomas Kincaid Bruner,	B.E. 1910,	Biscoe, N. C.
Assistant Superintendent Francis Cotton Mills.		
Carney John Bryan,	B.E. 1907,	Panama City, Fla.
Wholesale Fish Dealer.		
John Harvey Bryan,	B.E. 1908,	Wilkinsburg, Pa.
Apprentice Engineer, Westinghouse Machine Co., of East Pittsburg, Pa.		
Elton Elroy Buck, ‡	B.E. 1910,	Hampton, Va.
Joseph Samuel Buffaloe,	B.S. 1897,	Garner, N. C.
Physician.		
Joel W. Bullock,	B.Agr. 1905,	Dabney, N. C., R. 1.
Farmer.		
Walter Austin Bullock,	B.S. 1895,	Cayey, Porto Rico.
Superintendent Porto Rican Leaf Tobacco Company's Cayey Plantations.		
James Harry Bunn,	B.E. 1900,	Henderson, N. C.
Superintendent Henderson Cotton Mills.		
William Bryant Burgess,	B.E. 1908,	Portsmouth, Va.
Electrical Draftsman, Government Navy Yard.		
William Andrews Buys,	B.E. 1906,	Belhaven, N. C.
Civil Engineer, The Interstate Cooperage Co.		
Lindsay Ferguson Carleton,	B.E. 1907,	Charlotte, N. C.
Electrical Engineer Contractor, Ideal Electric Co.		
John Samuel P. Carpenter,	B.E. 1903,	Cherryville, N. C.
Director and Superintendent Melville Manufacturing Co.		
John William Carroll,	B. S. 1897,	Wallace, N. C.
Physician.		
Robert Hill Carter,	B.E. 1907,	Corozal, Canal Zone.
Switchboard Operator, Isthmian Canal Commission.		

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‡ Not heard from this year.

Name.	*Degree.*	*Address.*	
Henry Brozier Cartwright,	B.E. 1905,	Sarasota, Fla.	Resident Engineer S. A. L. Ry.
Junius Sidney Cates,	B.S. 1902,	Washington, D. C.	M.Agr. 1904. Assistant Agriculturist, U. S. Department of Agriculture.
William Miller Chambers,	B.E. 1905,	Maben, W. Va.	Pay Roll Clerk, W. M. Ritter Lumber Co.
Mark Hopkins Chesbro,	B.Agr. 1906,	Claremont, Va.	Farmer and Dairyman.
Connor Calhoun Clardy,	B.E. 1906,	Detroit, Mich.	Assistant Road Foreman of Engines, Electrical Department Michigan Central R. R.
Charles Edward Clark,	B.S. 1897,	Charlotte, N. C., R. 9.	Special Agent F. C. Dem. Work, U. S. Department of Agriculture.
David Clark,	B.E. 1895,	Charlotte, N. C.	M.E. 1896, C.E. 1897. Managing Editor Southern Textile Bulletin.
James Duncan Clark,	B.S. 1906,	Tampa, Fla.	President Peninsular Paper Co.
John Washington Clark,	B.E. 1906,	West Durham, N. C.	B.E. (Tex.) 1907. Erwin Cotton Mills Co.
Thorne McKenzie Clark,	B.E. 1909,	Aldama, Tamps, Mex.	National Railroad of Mexico.
Walter Clark, Jr.,	B.E. 1903,	Raleigh, N. C.	Attorney at Law.
William Alexander Graham Clark,	B.S. 1897,	Washington, D. C.	M. E. 1899. Textile Expert to the Tariff Board, U. S. Government.
Samuel Herbert Clarke,	B.E. 1906,	Richmond, Va.	With H. Clarke & Sons.
Wiley Theodore Clay,	B.E. 1906,	West Raleigh, N. C.	M.E. 1909. Instructor N. C. College of Agriculture and Mechanic Arts.
Robert Baxter Cochran,	B.E. 1902,	East Norwood, Ohio.	Chief Inspector Bullock Electrical Manufacturing Co.
Anson Elikem Cohoon,	B.S. 1898,	Eugene, Oregon.	Forest Surveyor, U. S. Department of Agriculture.
John Eliot Coit,	B.Agr. 1903,	Whittier, Cal.	Assistant Professor of Pomology, University of California.
Paul Collins,	B.S. 1901,	New Haven, Conn.	Analytical and Consulting Chemist.
George Washington Corbett, Jr.,	B.E. 1895,	Currie, N. C.	Corbett & Corbett, Manufacturers of Lumber.
Summey Crouse Cornwell,	B.E. 1903,	Gastonia, N. C.	In charge Gastonia Office, Solomon-Norcross Co., Civil Engineers.

Name.	*Degree.*	*Address.*	
Charles Edward Corpening,	B.E. 1894,	Lenoir, N. C., R. 3.	Farmer.
Lewellyn Hill Couch,	B.E. 1908,	Hamlet, N. C.	Southern Bell Telephone and Telegraph Co.
Walter Miller Cowles,	B.E. 1909,	Detroit, Mich.	Automobile Tester, Chalmers Motor Co.
David Cox,	B.E. 1894,	Hertford, N. C.	County Surveyor and Manager Yeopim Lumber Co.
Duncan Archibald Cox,	B.S. 1906,	Rowland, N. C.	Hardware Business.
William Pescud Craige,	B.S. 1901,	Marion, N. C.	
William Lois Craven,	B.E. 1901,	York, Pa.	Designer and Estimator, York Bridge Co.
Charles Lester Creech,	B.S. 1903,	Winston-Salem, N. C.	Spach Brothers Wagon Works.
Alexander Doane Cromartie,	B.Agr. 1906,	Garland, N. C.	Farmer.
William Henry Crow,	B.E. 1910,	Monroe, N. C.	Merchant and Farmer.
Felix Gray Crutchfield,	B.E. 1901,	Winston-Salem, N. C.	Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.
Eugene English Culbreth,	B.E. 1903,	Raleigh, N. C.	Assistant Teller Commercial National Bank.
Hugh McCullom Curran,	B.S. 1898,	Manila, P. I.	Foresty Service, Philippine Government.
Edwin Speight Darden,	B.S. 1895,	Wilson, N. C.	Jones & Darden, Farmers and Warehousemen.
Walter Lee Darden,	B.E. 1903,	Portsmounth, Va.	Chief Draftsman, Seaboard Air Line Railway.
Joseph Frank Davidson,	B.E. 1909,	Norwood, Ohio.	Student Course, Allis-Chalmers Co.
George Maslin Davis,	B.E. 1901,	Roanoke, Va.	Draftsman, Mechanical Engineer's Office, N. & W. Ry.
William Earle Davis,	B.E. 1910,	Charlotte, N. C.	Southern Power Co.
William Kearney Davis,	B.E. 1895,	Marion, S. C.	Superintendent Marion Manufacturing Co.
Claud Council Dawson, ‡	B.E. 1908,	Charlotte, N. C.	Mayes Manufacturing Co.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*	
THOMAS THEODORE DAWSON,	B.E. 1910,	Knight's Key, Fla.	Florida East Coast Railway.
WILLIAM SAMUEL DEAN,	B.E. 1909,	Agr'l College, Miss.	In charge Carding and Spinning, Textile School.
JOSEPH CHARLES DEY,	B.S. 1895,	New Orleans, La.	
JUNIUS FRANKLIN DIGGS,	B.S. 1903,	Rockingham, N. C.	Planter and Merchant.
CARLTON O'NEAL DOUGHERTY, ‡	B.E. 1909,	Belton, S. C.	Belton Cotton Mills.
FRED ATHA DUKE,	B.E. 1909,	Raleigh, N. C.	Civil Engineer S. A. L. Railway.
JAMES LEONIDAS DUNN,	B.S. 1910,	Scotland Neck, N. C.	Farmer.
ALVIN DEANS DUPREE,	B.E. 1908,	Greenville, N. C.	Office Clerk of H. A. White.
RAYMOND ROWE EAGLE,	B.E. 1908,	New Bern, N. C.	Brown & Eagle, Civil Engineers.
MINNIC LUTHER EARGLE,	B.Agr. 1908,	Columbia, S. C.	With Dickert & Eargle, Real Estate.
JACOB TATUM EATON,	B.Agr. 1907,	Farmington, N. C.	Dairyman and Farmer.
WILLIAM HUNT EATON,	B.S. 1909,	Raleigh, N. C.	Assistant Dairyman State Department of Agriculture.
LATTA VANDERION EDWARDS,	B.E. 1906,	Ithaca, N. Y.	Instructor in Railroad Engineering, Cornell University.
SEBA ELDRIDGE,	B.E. 1907,	New York, N. Y.	Graduate Student Columbia University.
TIMOTHY ELDRIDGE,	B.E. 1904,	Mount Olive, N. C.	Superintendent of Electric Light Plant.
THEOPHILUS THOMAS ELLIS,	B.E. 1903,	Henderson, N. C.	Farmer.
WELDON THOMPSON ELLIS,	B.E. 1906,	West Raleigh, N. C.	M. E. 1908. Assistant Professor of Mechanical Engineering, N. C. College of Agriculture and Mechanic Arts.
LEE BORDEN ENNETT,	B.S. 1895,	Cedar Point, N. C.	Superintendent of County Public Schools and Farmer.
ALBERT EDWARD ESCOTT,	B.E. 1906,	Raleigh, N. C.	Secretary Raleigh Cotton Mills.
WILLIAM CARLYLE ETHERIDGE,	B.Agr. 1906,	West Raleigh, N. C.	M.S. 1908. Associate Agronomist, N. C. Experiment Station.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*
Benjamin Bryan Everett, Graduate Student University of Wisconsin.	B.Agr. 1907,	Madison, Wis.
James Beckett Ewart, ‡ Western Electric Co.	B.E. 1906,	Hawthorne, Ill.
Ralph Ringgold Faison, Lieutenant, Philippine Constabulary.	B.S. 1909,	Manila, P. I.
William Alexander Faison, Student Railway M. E. University of Illinois.	B.E. 1909,	Champaign, Ill.
Isaac Herbert Farmer, Draftsman, Seaboard Air Line Ry.	B.E. 1908,	Portsmouth, Va.
James William Farrior, ‡ General Electric Co., Testing Department.	B.E. 1904,	Schenectady, N. Y.
William Dollison Faucette, C.E. 1910. Chief Assistant to President Seaboard Air Line Ry.	B.E. 1901,	New York City.
Isaac Henry Faust, Farmer and Contractor.	B.E. 1895,	Ramseur, N. C.
Benjamin Carey Fennell, M.E. 1900. Southern Representative American Blower Co., of Detroit, Mich., and Ball Engine Co., Erie, Pa.	B.S. 1898,	Atlanta, Ga.
James Lumsden Ferebee, Engineer T. Chalkley Hatton, Drainage Construction.	B.E. 1902,	Atlantic City, N. J.
Benjamin Troy Ferguson, Farm Superintendent J. Van Lindley Nursery Co.	B.Agr. 1908,	Pomona, N. C.
John Daniel Ferguson, County Surveyor.	B.E. 1903,	Bladenboro, N. C.
John Lindsay Ferguson, Operator Hydro-Electric Plant, Isthmian Canal Commission.	B.E. 1907,	Wilkinsburg, Pa.
Walter Goss Finch, Junior Engineer U. S. War Department.	B.E. 1905,	Vicksburg, Miss.
William Walter Finley, Breeder and Importer of Percheron Horses.	B.S. 1904,	N. Wilkesboro, N. C.
Frank Fuller Floyd, Vice-President and Sales Manager, Jellico Coal Mining Co.	B.E. 1893,	Knoxville, Tenn.
Frank Lindsay Foard, Reid Grocery Co.	B.S. 1909,	Winston-Salem, N. C.
Rufus Eugene Forbis, Draftsman Peter S. Gilchrist.	B.E. 1910,	Charlotte, N. C.
Hugh Pierce Foster, General Manager Southern Manufacturing Co. of Pittsburg, Pa.	B.E. 1903,	Mt. Pleasant, Ga.
Shirley Watson Foster, Expert Bureau of Entomology, U. S. Department of Agriculture.	B.Agr. 1906,	Washington, D. C.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*	
George Washington Foushee, ‡	B.E. 1904,	Greensboro, N. C.	Bookkeeper Dicks Laundry Co.
Elias Van Buren Fowler,	B.E. 1907,	Schenectady, N. Y.	Testing Department General Electric Co.
Roscoe Loomis Fox,	B.E. 1909,	Waynesboro, Va.	Bookkeeper Rose Cliff Fruit Farm, Inc.
Francis Marion Foy, †	B.S. 1899,	Scott's Hill, N. C.	
Charles Duffy Francks,	B.E. 1893,	Richlands, N. C.	Superintendent Richlands Graded Schools.
George Stronach Fraps,	B.S. 1896,	College Station, Tex.	State Chemist.
Percy Leigh Gainey,	B.Agr. 1908,	St. Louis, Mo.	M.S., 1910. Teaching Fellow, Washington University, Missouri Botanical Garden.
Edgar William Gaither,	B.S. 1904,	Wooster, Ohio.	First Assistant Chemist Ohio Agricultural Experiment Station.
James Jervey Gantt,	B.E. 1910,	Charleston, S. C.	Draughtsman City Engineer's Office.
Junius Talmage Gardner,	B.E. 1908,	Shelby, N. C.	Shelby Insurance and Realty Co.
Oliver Max Gardner,	B.S. 1903,	Shelby, N. C.	Lawyer.
Clement Leinster Garner,	B.E. 1907,	Manila, P. I.	United States Coast and Geodetic Survey.
Lewis Price Gattis, ‡	B.E. 1909,	Wilmington, N. C.	Civil Engineer Atlantic Coast Line Railroad.
Edward Moore Gibbon,	B.E. 1893,	Jacksonville, Fla.	Engineering.
Nicholas Louis Gibbon,	B. S. 1897,	Lakeview, N. C.	Civil Engineer.
Seth Mann Gibbs,	B.E. 1908,	Jacksonville, Fla.	Civil Engineer, Seaboard Air Line Railway.
Lamar Carson Gidney,	B.E. 1903,	Shelby, N. C.	Shelby Plumbing and Electric Co.
Lovic Rodgers Gilbert,	B.E. 1907,	Raleigh, N. C.	Overseer Carding and Spinning, Caraleigh Mills Co.
Ransom Eaton Gill,	B.E. 1910,	Charlotte, N. C.	Meter Department, Southern Power Co.

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†Deceased.

‡Not heard from this year.

Name.	*Degree.*	*Address.*
Roy Joseph Gill, Surveyor, Bureau of Lands.	B. E. 1907,	Manila, P. I.
Maurice Mordecai Glasser, ‡	B.E. 1908,	Charleston, S. C.
John Howard Glenn, †	B.E. 1903,	Crowder's Creek, N. C.
Charles Willis Gold, Secretary and Superintendent of Agencies, Jefferson Standard Life Insurance Co.	B.S. 1895,	Raleigh, N. C.
Moses Henry Gold, Civil Engineer, Seaboard Air Line Railway.	B.E. 1908,	Raleigh, N. C.
Albert Sidney Johnston Goss, Assistant Civil Engineer Southern Power Co.	B.E. 1909,	Charlotte, N. C.
John David Grady, Farmer and General Merchant.	B.Agr. 1908,	Resaca, N. C.
Robert Strickler Graves, Special Salesman, General Electric Company.	B.E. 1907,	Cincinnati, Ohio.
Charlie Pool Gray, Principal of Buxton Academy.	B.E. 1909,	Buxton, N. C.
George Pender Gray, ‡ Commercial Traveler Read Phosphate Co., of Nashville, Tenn.	B.S. 1893,	Tarboro, N. C.
James Miller Gray, Assistant Director Boys' Corn Clubs and Demonstration, State Department of Agriculture.	B.S. 1910,	Raleigh, N. C.
Sterling Graydon, Superintendent Atherton Mills.	B.E. 1905,	Charlotte, N. C.
Andrew Hartsfield Green, Jr., With Commercial National Bank.	B.S. 1909,	Raleigh, N. C.
Marion Jackson Green, Pattern Maker, The Cole Manufacturing Co.	B.S. 1896,	Charlotte, N. C.
Arthur Wynns Gregory, ‡ British-American Tobacco Co.	B.S. 1906,	Shanghai, China.
Paul Stirewalt Grierson, Electrician in Charge, Charles Cory & Son, New York.	B.E. 1904,	Newport News, Va.
James Perrin Gulley, Traveling Salesman, Federal Gas Fixture Works, of Philadelphia.	B.E. 1904,	Raleigh, N. C.
Emil Gunter, Engineering Department, Edison Electric Illuminating Co.	B.E. 1903,	Boston, Mass.
Dorsey Yates Hagan, Salesman, The American Tobacco Co.	B.E. 1908,	Greensboro, N. C.

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† Deceased.

‡ Not heard from this year.

Name.	*Degree.*	*Address.*
Horace Lester Hamilton, Technical Writer, N. W. Ayer & Son.	B.E. 1906,	Philadelphia, Pa.
William Roy Hampton, Vice-President and General Manager, W. H. Hampton & Son, Inc.	B.S. 1909,	Plymouth, N. C.
Samuel Merrill Hanff, Episcopal Clergyman.	B.S. 1900,	Duke, N. C.
John Frederick Hanselman, ‡ Northern Alabama Reduction Co.	B.E. 1906,	Sheffield, Ala.
George Rom Hardesty, Chief Engineer, State Hospital.	B.E. 1907,	Goldsboro, N. C.
Philip William Hardie, ‡ Civil Engineer, U. S. Government.	B.E. 1907,	Manila, P. I.
Jarvis Benjamin Harding, C.E. 1909. Reconnaissance Engineer, National Railways of Mexico.	B.E. 1904,	Mexico City, Mexico.
Richard Hugh Harper, Gwyn-Harper Manufacturing Co.	B.S. 1905,	Patterson, N. C.
George Roland Harrell, The Grasselli Chemical Co.	B.S. 1900,	Grasselli, N. J.
John William Harrelson, Instructor N. C. College of Agriculture and Mechanic Arts.	B.E. 1909,	West Raleigh, N. C.
Ceburn Dodd Harris, Assistant to President, Strater Brothers Tobacco Co.	B.S. 1897,	Anchorage, Ky.
Gordon Harris, Testing Department General Electric Co.	B.E. 1909,	Schenectady, N. Y.
William Henry Harris, M.E. 1896. Treasurer and Agent, Slater Manufacturing Co.	B.E. 1895,	Pawtucket, R. I.
Frank Hawks, Special Apprentice Atlantic Coast Line R. R.	B.E. 1910,	Rocky Mount, N. C.
Edmund Burke Haywood, Mexican National Railway.	B.E. 1910,	San Francisco, Augamalutero, Esta de Michadcan, Mexico.
Thomas Frederick Haywood, Assistant Resident Engineer, L. & N. Railroad.	B.E. 1909,	Nolandsburg, Ky.
Jokton Lafayette Hemphill, Commercial Engineer, General Electric Co.	B.E. 1907,	Schenectady, N. Y.
Leonard Henderson, Student in Civil Engineering N. C. College of Agriculture and Mechanic Arts.	B.E. 1909,	West Raleigh, N. C.
Maurice Hendrick, Cliffside Mills.	B.E. 1908,	Cliffside, N. C.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*	
Lawrence James Herring,	B.Agr. 1907,	Experiment, Ga.	Animal Pathologist and Veterinarian, Georgia Experiment Station.
Jere Isaac Herritage,	B.E. 1905,	Jacksonville, N. C.	Surveyor and Timber Estimator, John L. Roper Lumber Co.
Clarence Wilson Hewlett,	B.E. 1906,	Baltimore, Md.	Assistant to Director of Physical Laboratory, Johns Hopkins University.
Rufus Williams Hicks, Jr.,	B.E. 1910,	Wilmington, N. C.	Draftsman with City Engineer.
Bascombe Britt Higgins,	B.S. 1909,	Ithaca, N. Y.	M.S. 1910. Assistant and Graduate Student in Botany, Cornell University.
Lyda Alexander Higgins,	B.S. 1910,	Raleigh, N. C.	Assistant State Dairyman, State Department of Agriculture.
James Allen Higgs, Jr.,	B.E. 1906,	E. Chattanooga, Tenn.	C.E. 1910. Assistant Engineer, Southern Railway.
Jere Eustis Highsmith,	B.S. 1897,	Parkersburg, N. C.	Farmer.
Daniel Harvey Hill, Jr.,	B.S. 1909,	West Raleigh, N. C.	Graduate Student, N. C. College of Agriculture and Mechanic Arts.
Guy Francis Hinshaw,	B.E. 1907,	Winston-Salem, N. C.	City Engineer of Winston.
George Herbert Hodges,	B.E. 1904,	Scottdale, Pa.	Engineer H. C. Frick Coke Co.
Laban Miles Hoffman, Jr.,	B.E. 1905,	Dallas, N. C.	Cashier The Bank of Dallas.
Charles Bolling Holladay,	B.E. 1893,	Wilmington, Del.	The DuPont Co.
William Norman Holt,	B.E. 1907,	Princeton, N. C.	Planter.
Benjamin Oliver Hood,	B.E. 1901,	New York City.	Engineer F. A. Burdett & Co., Consulting Engineers.
Louis Lee Hood,	B.E. 1910,	New York City.	Structural Draughtsman F. A. Burdett & Co, Consulting Engineers.
Wayne Arington Hornady,	B.S. 1909,	Kansas City, Mo.	M.S. 1910. Student Kansas City Veterinary College Home Address, Burlington, N. C.
John Howard,	B.S. 1896,	Middlesboro, Ky.	Attorney at Law.
Jesse McRae Howard,	B.E. 1904,	Concord, N. C.	Overseer Dyeing, Gibson Manufacturing Co.
Robert Irving Howard,	B.E.1904(Tex.),	Acambaro,Gto, Mex .	Assistant Resident Engineer, National Railways of Mexico.

Name. *Degree.* *Address.*

Branton Faison Huggins, B.E. 1904, Macon, Ga.
Manager Builders Lumber and Supply Co.

Henry Allen Huggins, B.S. 1900, Wilmington, N. C.
Bookkeeper Geo. W. Huggins, Jeweler.

Christopher Miller Hughes, B.E. 1895, Richmond, Va.
B.S. 1899. Sales Manager, Montague Manufacturing Co.

Lloyd Rainey Hunt, B.E. 1905, Lexington, N. C.
Electrical Engineer, Dacotah and Nokomis Cotton Mills.

Hill McIver Hunter, B.E. 1904, Greensboro, N. C.
Buyer of Mill Supplies, Proximity Manufacturing Co. and White Oak Mills.

Malcolm Beall Hunter, B.E. 1895, Charlotte, N. C.
President Acme Plumbing and Heating Co.

John William Ivey, B.E. 1909, Dublin, Ga.
Central of Georgia Railway Co.

William Colbert Jackson, B.S. 1896, Middlesex, N. C.
Farmer.

Eugene Colistus Johnson, B.E. 1903, Ingold, N. C.
Farmer.

William Fladger R. Johnson, B.E. 1909, Dillon, S. C.
Firm of Johnson & Johnson, Civil Engineers.

Albert Carl Jones, B.Agr. 1907, High Point, N. C.
Veterinarian, Meat and Milk Inspector.

Frederick John Jones, B.E. 1909, Louisville, Ky.
Construction Department Louisville and Nashville R. R.

Garland Jones, Jr., B.S. 1900, El Paso, Tex.

Robert Frank Jones, B.E. 1910, Knight's Key, Fla.
Rodman, Florida East Coast Railway, Pigeon Key Camp.

William Whitmore Jones, B.E. 1907, Franklin, N. C.
Superintendent Franklin Light and Power Co.

Clyde Raymond Jordan, B. E. 1910, Currie, N. C.
Manufacturer of Lumber.

Martin Kellogg, B.Agr. 1901, Sunbury, N. C.
Farmer.

Clyde Bennett Kendall, B.S. 1897, Washington, D. C.
Assistant Topographer, U. S. Geological Survey.

Alpheus Rountree Kennedy, B.S. 1898, Quincy, Mass.
Ship Draftsman, Fore River Shipbuilding Co.

James Matthew Kennedy, B.E. 1903, Raleigh, N. C.
Architect.

Name.	*Degree.*	*Address.*	
Sydney G. Kennedy,	B.S. 1897,	Sanford, Fla.	Round House Foreman, Atlantic Coast Line R.R.
Arthur Templeton Kenyon, ‡	B.E. 1905,	Cali, Colombia.	Assistant Locating Engineer, Canca Valley R. R. Co.
William Kerr,	B.S. 1904,	Blacksburg, Va.	Assistant in Animal Husbandry, Va. Agricultural Experiment Station.
Luther Hill Kirby,	B.E. 1910,	Durango, Dgo, Mex.	Office of Principal Engineer, Durango, Llano Grande Line, National Railways of Mexico.
William Franklin Kirkpatrick,	B.E. 1904,	Agr'l College, Miss.	B.Agr. 1905. Poultry Husbandman, Mississippi A. & M. College Experiment Station.
Joseph Lawrence Knight, ‡	B.S. 1897,	Dewey, Fla.	Pas Manufacturing Co., Naval Stores.
Starr Neely Knox,	B.E. 1905,	Charlotte, N. C.	Assistant Engineer, Southern Railway Co.
William Graham Knox,	B.S. 1906,	New York City.	First Assistant Chemist, Shop Laboratory, Western Electric Co.
James Herritage Koonce,	B.E. 1905,	Hamlet, N. C.	With W. P. Bonsal & Co.
Lafayette Franck Koonce,	B.Agr. 1907,	Raleigh, N. C.	Practicing Veterinary Medicine.
Herbert William Kueffner,	B.E. 1908,	Norwood, N. C.	Instrumentman Southbound Railway Co., Home Address, Durham, N. C.
Frederick Creecy Lamb,	B.S. 1898,	El Paso, Tex.	Health Office (Chemist).
Claude Milton Lambe,	B.E. 1908,	Rockingham, N. C.	Transitman, Rockingham Power Co.
Bennett Land, Jr.,	B.E. 1903,	Jacksonville, Fla.	Division Engineer, Seaboard Air Line Railway.
Joseph Thomas Land,	B.E. 1903,	St. Augustine, Fla.	Office Engineer, Florida East Coast Railway.
Mark Clinton Lasitter,	B.E. 1910,	Snow Hill, N. C.	Engineer and Superintendent Switzerland Co., in Mitchell and McDowell Counties.
James Edward Latham,	B.S. 1909,	Manila, P. I.	Philippine Constabulary, Third Lieutenant.
Charles Edward Latta, ‡	B.E. 1908,	Raleigh, N. C.	Grocer.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*
Eugene Talmage Lee,	B.E. 1910,	Panindicuaro, Mich, Mexico.
Assistant Resident Engineer, National Railways of Mexico, Permanent Address, Esyacion de Buena Vista, Mexico City, D. F., Mexico.		
Jesse Julian Liles,	B.E. 1901,	Pittsburg, Pa.
Sales Department, General Electric Co.		
Henry Marvin Lilly, ‡	B.E. 1905,	Port Arthur, Tex.
Draftsman and Building Superintendent, S. P. Herbert & Co.		
Ernest Edwin Lincoln,	B.E. 1904,	Phœnixville, Pa.
Draftsman, The Phœnix Bridge Co.		
David Lindsay,	B.E. 1908,	Draper, N. C.
Assistant Superintendent German-American Co.		
John Henry Little,	B.E. 1908,	Chicago, Ill.
Salesman's Assistant, General Electric Co.		
Ulphian Carr Loftin,	B.S. 1910,	Gainesville, Fla.
Assistant Entomologist, Florida Agricultural Experiment Station.		
Ralph Long, ‡	B.S. 1909,	Suffolk, Va.
Grain Business.		
Louis Edgar Lougee, ‡	B.S. 1907,	Pittsburg, Pa.
Jones & Laughlin Steel Co.		
Lewis Omer Lougee,	B.E. 1901,	Pittsburg, Pa.
Civil and Mining Engineer with Geo. S. Baton & Co.		
Joe Poindexter Lovill, ‡	B.E. 1906,	Spokane, Wash.
Civil Engineer North Coast Lumber Co.		
George Lafayette Lyerly,	B.E. 1908,	Hickory, N. C.
Manager and Treasurer Shuford Hardware Co.		
Lipscombe Goodwin Lykes,	B.E. 1905,	Havana, Cuba.
Lykes Brothers.		
Thompson Mayo Lykes, ‡	B.E. 1906,	Tampa, Fla.
Secretary The Lykes Co.		
George Green Lynch, Jr.,	B.E. 1905,	Wilmington, N. C.
Draftsman Atlantic Coast Line R. R.		
Albert Sydney Lyon,	B.S. 1899,	Rocky Mount, N. C.
Superintendent Rocky Mount Public Works.		
Edmond Shaw Lytch,	B.E. 1903,	Laurinburg, N. C.
Partner Laurinburg Machine Co.		
William McNeil Lytch,	B.E. 1893,	Laurinburg, N. C.
Partner Laurinburg Machine Co.		
Henry Kreiger McConnell,	B.S. 1907,	East Point, Ga.
Chemist International Agricultural Corporation.		

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‡Not heard from this year.

Name.	*Degree.*	*Address.*	
Frank Neely McDowell,	B.S. 1910,	Charlotte, N. C., R. 3	Farmer.
Malcolm Roland McGirt,	B.Agr. 1905,	Fayetteville, N. C.	Farmer.
John Fairly McIntyre,	B.E. 1904,	Laurinburg, N. C.	Farmer.
Walter Hoge McIntyre,	B.S. 1905,	State College, Pa.	Pennsylvania State College, Research Work.
Samuel Christopher McKeown, ‡	B.E. 1895,	Sumter, S. C.	Sumter Telephone Manufacturing Co.
James McKimmon,	B.E. 1904,	Raleigh, N. C.	General Bookkeeper Raleigh Banking and Trust Co.
John Luther McKinnon,	B.Agr. 1902,	Laurinburg, N. C.	Farmer.
James William McKoy, ‡	B.E. 1893,	Black Mountain, N.C.	Civil Engineer and Merchant.
Horace Smith McLendon,	B.Agr. 1906,	Sanford, Fla., R. 2.	Farm Superintendent Holden Real Estate Co.
Lennox Polk McLendon,	B.S. 1910,	Wadesboro, N. C.	Student Law School of the University of N. C.
Walter Jones McLendon, Jr.,	B.S. 1897,	Marshall, N. C.	President and General Manager Capitola Manufacturing Co.
Oscar Franklin McNairy,	B.E. 1907,	Athens, Ga.	Inspecting Engineer Seaboard Air Line Railway. Home Address, Greensboro, N. C.
Samuel Huxley McNeely,	B.E. 1909,	Schenectady, N. Y.	Student Engineer, General Electric Company.
Charles Harden McQueen,	B.E. 1901,	Boston, Mass.	Inspector Bitulithic Pavements, Warren Brothers Co.
Samuel Macon Mallison, ‡	B.E. 1909,	Washington, N. C.	
Carroll Lamb Mann,	B.S. 1899, C.E. 1906.	West Raleigh, N. C.	Civil Engineer and Assistant Professor, N. C. College of Agriculture and Mechanic Arts.
Louis Henry Mann,	B.E. 1900,	Washington, N. C.	Dentist.
William Leake Manning,	B.E. 1910,	Reutlinger, Province Wurtenburg, Germ.	Student at Designing Academy, Textile Course.
Clarence Talmage Marsh,	B.E. 1908,	Fort Wint, Grande Island, P. I.	1st Lieutenant Coast Artillery Corps.

Not heard from this year.

Name.	*Degree.*	*Address.*
William Roydan Marshall, Salesman Westinghouse Machine Co. of East Pittsburg, Pa.	B.E. 1909,	Swissvale, Pa.
Ralph Cecil Mason, Farmer.	B.S. 1909,	Edenton, N. C.
Arthur Ballard Massey, Instructor in Botany and Bacteriology in Clemson Agricultural College.	B.S. 1909,	Clemson College, S. C.
Walter Jerome Mathews, Machine Broker.	B.E. 1893,	Goldsboro, N. C.
Raymond Maxwell, Civil Engineer Mattamuskeet Railway Co.	B.E. 1906,	Swan Quarter, N. C.
Melvin Solomon Mayes, Engineer Stem Power Co.	B.E. 1910,	Stem, N. C.
Frank Theophilus Meacham, Superintendent Branch Experiment Station, U. S. Department of Agriculture.	B.S. 1893, M.S. 1894.	Statesville, N. C.
Eugene Franklin Meador, Machinist Riverside Mills.	B.E. 1907,	Danville, Va.
Repton Hall Merritt, Secretary-Treasurer Powell & Powell, Inc.	B.S. 1897,	Raleigh, N. C.
Robert Graham Mewborne, Chemist Kentucky Tobacco Product Co.	B.S. 1896,	Louisville, Ky.
Bennett Taylor Mial, ‡ Resident Engineer McClintic-Marshall Construction Co. of Pittsburg, Pa.	B.E. 1907,	Gadsden, Ala.
Frank Curtis Michael, Erecting Engineer Consolidated Engine Stop Co.	B.E. 1907,	New York City.
David John Middleton, Farming for E. B. Craddock.	B.Agr. 1908,	Chester Springs, Va.
Joseph Alfred Miller, Jr., Vice-President and Manager Miller Supply Co.	B.E. 1904,	Brevard, N. C.
Walker Morehead Millner, Assistant Superintendent Rhode Island Co.	B.E. 1909,	Spray, N. C.
John Maple Mills, Car Accountant Raleigh and Southport Railway Co.	B.E. 1907,	Raleigh, N. C.
Benjamin Franklin Montague, Assistant Engineer J. N. Ambler.	B.E. 1909,	Winston-Salem, N. C.
Henry Starbuck Montague, Assistant Chemist Mississippi Agricultural College.	B.S. 1907,	Agr'l College, Miss.
Leon Davis Moody, Engineering Apprentice Westinghouse Machine Co. of East Pittsburg, Pa.	B.E. 1910,	Wilkinsburg, Pa.
Eugene Boise Moore, Apprentice Allis-Chalmers Co.	B.E. 1910,	Norwood, Ohio.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*	
Lacy Moore,	B.E. 1906,	Washington, D. C.	Civil Engineer Southern Railway.
James Oscar Morgan,	B.Agr. 1905,	Agr'l College, Miss.	Professor of Agronomy, Mississippi A. & M. College.
Robert Lee Morgan,	B.E. 1910,	Wilson, N. C.	Foreman Artesian Well Co.'s Machine Shop.
Jesse John Morris, ‡	B.E. 1903,	Norfolk, Va.	Civil Engineer Norfolk Southern Railroad.
William Flaud Morris,	B.E. 1909,	West Raleigh, N. C.	Instructor N. C. College of Agriculture and Mechanic Arts.
Joseph Graham Morrison,	B.Agr. 1906,	Stanley, N. C.	Mariposa Cotton Mills.
Robert Hall Morrison,	B.E. 1900,	Stanley, N. C.	President Mariposa Cotton Mills.
John Lightfoot Morson, ‡	B.E. 1907,	Raleigh, N. C.	Civil Engineer Seaboard Air Line Railway.
William Field Morson, ‡	B.E. 1904,	Dillon, S. C.	Assistant Engineer N. & S. C. Railroad.
Laurie Moseley,	B.E. 1902,	Greensboro, N. C.	Southern Agent Owego Bridge Co., also President Carolina Concrete Co.
Vassar Young Moss,	B.E. 1902,	Canonsburg, Pa.	Draftsman Fort Pitt Bridge Works.
Harry Yoemans Mott,	B.S. 1910,	Mooresville, N. C.	Farmer.
Lindsley Alexander Murr,	B.E. 1905,	Birmingham, Ala.	Assistant Engineer Seaboard Air Line Railway.
Garland Perry Myatt,	B.S. 1905,	Baltimore, Md.	Head Chemist Thomsen Chemical Co.
O'Kelly W. Myers,	B.S. 1899,	Cornwall-on-Hudson, N.Y.	Civil Engineer, Board of Water Supply City of New York.
Jesse Clarence Myrick,	B.E. 1906,	Wilmington, N. C.	Assistant Master Mechanic Tidewater Power Co.
Leon Andrew Neal, ‡	B.E. 1904,	Bristol, Tenn.	Assistant Engineer Virginia and Southwestern Railway Co.
William McCormick Neale,	B.E. 1910,	Columbus, Ohio.	Draftsman Elevator and Conveyor Department The Jeffrey Manufacturing Co.
Charles Arthur Nichols,	B.E. 1902,	Muskogee, Okla.	Manager Third Street Grocery Co.

‡Not heard from this year.

Name.	*Degree.*	*Address.*	
Charles Franklin Niven,	B.Agr.1906,	Dahlonega, Ga.	Professor of Agriculture, North Georgia Agricultural College.
Lola Alexander Niven,	B.Agr. 1906,	Rock Hill, S. C.	Professor of Agriculture and Horticulture, Winthrop Normal and Industrial College.
Lewis Milton Oden,	B.Agr. 1906,	Raleigh, N. C.	Proprietor Raleigh Creamery, Merchant and Trucker.
Thomas Jefferson Ogburn, Jr.,	B.E. 1906,	Richmond, Va.	In charge Type Composing Machines, Everett Waddey Co.
Albert Hicks Oliver,	B.S. 1897,	Mount Olive, N. C.	Farmer.
Samuel Loftin Oliver,	B.E. 1909,	Fort Lauderdale, Fla.	Furniture Salesman, Stranahan & Co.
James Elwood Overton,	B.Agr. 1907,	Ahoskie, N. C.	Manager Ahoskie Ice and Cold Storage Co.
David Starr Owen, ‡	B.E. 1903,	Fayetteville, N. C.	Superintendent Standard Turpentine Co.
Edwin Bentley Owen,	B.S. 1898,	West Raleigh, N. C.	Registrar N. C. College of Agriculture and Mechanic Arts.
John Alsey Park,	B.E. 1905,	Raleigh, N. C.	Secretary and General Manager Carolina Garage and Machine Co.
B. Moore Parker,	B.S. 1898,	West Raleigh, N. C.	Assistant Professor N. C. College of Agriculture and Mechanic Arts.
Clyde Ester Parker,	B.S. 1906,	Raleigh, N. C.	Firm of Parker Bros. & Co., Cotton Brokers and Merchants.
Eugene Leroy Parker,	B.S. 1899,	Mt. Pleasant, Tenn.	Manager E. L. Parker & Co., Chemists.
John Harvey Parker,	B.E. 1903,	Jacksonville, Fla.	Secretary-Treasurer and Manager, Jacksonville Pepsi-Cola Co.
James Lafayette Parker,	B.E. 1902,	New York City.	Assistant Engineer Herbert C. Keith, Consulting Engineer.
Julius Monroe Parker,	B.E. 1909,	Louisville, Ky.	Assistant Engineer on Construction Louisville and Nashville Railroad Co.
Thomas Franklin Parker,	B.Agr. 1907,	Raleigh, N. C.	M.S. 1908. Assistant Agronomist State Department of Agriculture.
Fred Maynard Parks,	B.E. 1907,	Wilkinsburg, Pa.	Engineering Department Westinghouse Electric and Manufacturing Co.
John Gilbert Paschal, ‡	B.E. 1909,	Madison, Ill.	Kettle River Quarries Co.
Arthur Lee Paschall,	B.Agr. 1907,	Lubbock, Tex.	Superintendent Lubbock Agricultural Experiment Station.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*
William Franklin Pate, Instructor in Chemistry N. C. College of Agriculture and Mechanic Arts.	B.S. 1901,	West Raleigh, N. C.
Mann Cabe Patterson, Firm of Patterson & Rouch, Machinery and Repair Work.	B.E. 1895,	Durham, N. C.
Robert Donnell Patterson, M.S. 1898. President The First State Bank.	B.S. 1894,	Chase City, Va.
William Joel Patton, ‡ Lumber Business.	B.E. 1904,	Brevard, N. C.
Charles Pearson, Chief Engineer and General Manager Pearson Construction Co., General Contractor.	B.E. 1894,	Dothan, Ala.
James Hicks Peirce, J. H. Peirce Lumber Co.	B.S. 1905,	Warsaw, N. C.
William Casper Pennington, General Assistant The Amazon Cotton Mills.	B.E. 1910,	Thomasville, N. C.
Samuel Oscar Perkins, Farmer.	B.S. 1906,	Adako, N. C.
Eugene Gray Person, Train Dispatcher, Central of Georgia Railway.	B.S. 1899,	Macon, Ga.
William Montgomery Person, ‡ Maryland Steel Company.	B.E. 1900,	Sparrow's Point, Baltimore, Md.
Frederick Colwell Phelps, Second Lieutenant 12th U. S. Infantry.	B.E. 1904,	Monterey, Cal.
William Ransome Phillips, Student Engineer, General Electric Co.	B.E. 1910,	Schenectady, N. Y.
Peter Penick Pierce, With Florida East Coast Railway.	B.E. 1909,	Knight's Key, Fla.
Guy Pinner, Structural Engineer, American Bridge Co.	B.E. 1907,	Wilmington, Del.
Winslow Gerald Pitman, ‡ McClintic-Marshall Construction Co.	B.E. 1907,	Cumberland, Md.
Benjamin Franklin Pittman, Student Course, Western Electric Co., Hawthorne, Ill.	B.E. 1908,	Cicero, Ill.
Lawrence Lyon Pittman, Civil Engineer.	B.E. 1908,	Whitakers, N. C.
Paul Miller Pitts, Machinist Jackson Lumber Co.	B.E. 1909,	Lockhart, Ala.
Angelo Bettlena Piver, Structural Draftsman, Phœnix Bridge Co.	B.E. 1906,	Phœnixville, Pa.

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‡Not heard from this year.

Name.	*Degree.*	*Address.*
William Crawford Piver, Manager Chemical Department Hemingway & Co.	B.S. 1906,	East Orange, N. J.
James Kemp Plummer, Assistant in Chemistry Cornell University.	B.S. 1907, M.S. 1909.	Ithaca, N. Y.
Pleasant H. Poindexter, Jr., Manager Panhandle Lumber Co.	B.Agr. 1905,	Canadian, Tex.
Ruble Isaac Poole, Instructor N. C. College of Agriculture and Mechanic Arts.	B.E. 1908,	West Raleigh, N. C.
Edward Griffith Porter, Transitman, Isthmian Canal Commission.	B.E. 1905,	Balboa, Canal Zone, Panama.
Junius Edward Porter, General Manager and Treasurer, J. E. Porter & Co., Railroad Contractors.	B.E. 1900,	Weldon, N. C.
Harry Alexander Powell, ‡ Turpentine Business.	B.E. 1908,	Melbourne, Fla.
James Alexander Powell, Apprentice Engineer Westinghouse Machine Co.	B.E. 1908,	Wilkinsburg, Pa.
Joel Powers, Draftsman Dewey Brothers.	B.E. 1903,	Goldsboro, N. C.
Thomas Milton Poyner, Engineer Western Maryland Railway.	B.E. 1908,	Ohio Pyle, Pa.
James Bruce Price, Student Lehigh University.	B.E. 1910,	South Bethlehem, Pa.
John Moir Price, Student Lehigh University.	B.E. 1909,	South Bethlehem, Pa.
Hugh Williams Primrose, †	B.S. 1897, M.S. 1900.	Raleigh, N. C.
Abram Hinman Prince, Special Agent U. S. Department of Agriculture, and Farmer.	B.S. 1895,	San Augustine, Tex.
Charles Marcellus Pritchett, Chief Division Engineer, Insular Government.	M.E. 1895, C.E. 1896.	Manila, P. I.
Victor Vashti Privott, Merchant.	B.E. 1895,	Suffolk, Va.
William Walter Rankin, Professor of Mathematics.	B.E. 1904,	Fredericksburg, Va.
Risden Patterson Reece, Mechanical Engineer American Portable Band Saw Mill Co.	B.E. 1904,	Winston-Salem, N. C.
Robert Richard Reinhardt, Student Kansas City Veterinary College. Home Address, Stanley, N. C.	B.S. 1909,	Kansas City, Mo.
William Benedict Reinhardt, ‡ Electrician Dawson Electric Light and Power Co., Ltd.	B.E. 1902,	Dawson, Y. T.

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†Deceased.
‡Not heard from this year.

Name.	*Degree.*	*Address.*
Roger Francis Richardson, Construction Engineer, Tennessee Coal, Iron and R. R. Co.	B.E. 1900,	Ensley, Ala.
William Richardson, Jr., Mechanical Draftsman H. C. Frick Coke Co.	B.E. 1904,	Scottdale, Pa.
Edward Hays Ricks, Teller First National Bank.	B.E. 1903,	Weldon, N. C.
Alfred Pratte Riggs, Florida East Coast Railway, West Summerland Camp.	B.E. 1909,	Knight's Key, Fla.
Durant Waite Robertson, ‡ Special Agent Bureau of the Census.	B. E. 1906,	Washington, D. C.
Joseph Henry Robertson, Electrician and Draughtsman North Carolina Public Service Co.	B.E. 1909,	Greensboro, N. C.
Jay Frederick Robinson, Draftsman, W. J. Wilkins and Co., Architects.	B.E. 1910,	Florence, S. C.
Gaston Wilder Rogers, Resident Interne, Hillman Hospital.	B.E. 1903,	Birmingham, Ala.
Zebbie George Rogers, Resident Engineer Buckhannon and Northern R. R.	B.E. 1894,	Morgantown, W. Va.
William Edwin Rose, ‡ Newport News Shipbuilding and Dry Dock Co.	B.E. 1900,	Newport News, Va.
Charles Burdette Ross, Contractor.	B.E. 1903,	Charlotte, N. C.
Floyd De Ross, President and Manager Lawton Coca-Cola Bottling Co.	B.E. 1900,	Lawton, Okla.
Carl Collins Sadler, Assistant Chief Engineer Prairie Pebble Phosphate Co.	B.E. 1910,	Mulberry, Fla.
James Olin Sadler, Assistant Engineer Louisville and Nashville Railroad Co.	B.E. 1909,	Jackson, Ky.
Willis Hunter Sanders, Superintendent Power, Roanoke Navigation and Water Power Co.	B.S. 1897,	Roanoke Rapids, N. C.
John Hyer Saunders, Locomotive Engineer, Atlantic Coast Line Railroad.	B.E. 1894,	Rocky Mount, N. C.
Ira Obed Schaub, Professor of Agricultural Extension N. C. College of Agriculture and Mechanic Arts.	B.S. 1900,	West Raleigh, N. C.
Leon Jacob Schwab, Civil Engineer Gulf, Colorado and Santa Fe Railway.	B.E. 1907,	Beaumont, Tex.
Robert Walter Scott, Jr., Superintendent Edgecombe Test Farm, N. C. Department of Agriculture.	B.Agr. 1905,	Rocky Mount, N. C.
Earle Aloysius Seidenspinner, ‡	B.S. 1910,	Washington, D. C.

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†Not heard from this year.

Name.	*Degree.*	*Address.*
Carl DeWitt Sellars, Sales Department Cone Export and Commission Co.	B.E. 1893,	Greensboro, N. C.
John Waldorf Sexton, Civil Engineer, Tennessee Coal, Iron and Railway Co.	B.E. 1910,	Birmingham, Ala.
Charles Edgar Seymore, †	B.S. 1893,	Raleigh, N. C.
Frank Webber Sherwood, M.S. 1911. Assistant Chemist N. C. Agricultural Experiment Station.	B.S. 1909,	Raleigh, N. C.
Robert Arnold Shope, Third Lieutenant, Philippine Constabulary.	B.E. 1909,	Manila, P. I.
John Wade Shore, Cashier Commercial and Savings Bank.	B.S. 1900,	Boonville, N. C.
John Houston Shuford, Technical Representative and Salesman Berlin Aniline Works.	B.S. 1903,	Charlotte, N. C.
John Oscar Shuford, Superintendent Electric Plant, Town of Lincolnton.	B.E. 1907,	Lincolnton, N. C.
George Gray Simpson, Editor Textile Manufacturer.	B.E. 1909,	Charlotte, N. C.
Frederick Erastus Sloan, General Agent The Security Life and Annuity Co.	B.S. 1899,	Charlotte, N. C.
William Neville Sloan,	B.E. 1909,	Franklin, N. C.
Andrew Thomas Smith, Draftsman in charge New York Shipbuilding Co.	B.S. 1899,	Camden, N. J.
Edgar English Smith, ‡ U. S. Coast and Geodetic Survey.	B.E. 1908,	Greensboro, N. C.
Edwin Harrison Smith, Rodman Atlantic Coast Line Railroad.	B.E. 1910,	Weldon, N. C.
Edward Oscar Smith, Special Draftsman, Newport News Shipbuilding and Dry Dock Co.	B.E. 1901,	Newport News, Va.
James Lawrence Smith, Jr., ‡ Assistant Engineer Raleigh and Southport Railway.	B.E. 1908,	Fayetteville, N. C.
Jonathan Rhodes Smith, Structural Steel Engineer, The Eastern Steel Co.	B.E. 1905,	Pottsville, Pa.
William Turner Smith, Manager and Partner Georgia Hydraulic Stone Co.	B.E. 1900,	Dublin, Ga.
Thomas Jehu Smithwick, Consulting and Erecting Engineer.	B.S. 1897,	Mount Airy, N. C.
Russell Elstner Snowden, Civil and Highway Engineer Covington County.	B.E. 1902,	Collins, Miss.

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†Deceased.
‡Not heard from this year.

Name.	*Degree.*	*Address.*
John Francis Speight,	B.E. 1910,	Whitakers, N. C.
Surveyor.		
John Davidson Spinks,	B.E. 1905,	Wilmington, N. C.
Junior Engineer, U. S. Engineering Department.		
Jesse Page Spoon,	B.Agr. 1908,	Kansas City, Mo.
Student Kansas City Veterinary College, M.S. 1909.		
St. Julian Lachicotte Springs,	B.S. 1910,	Lake Waccamaw, N. C.
Farming for H. B. Short.		
Ervin Blackeney Stack,	B.E. 1905,	Charlotte, N. C.
State Agent for United States Flaming Arc Lamp Co.		
Charles Burt Stainback,	B.E. 1910,	Wilkinsburg, Pa.
Apprentice Westinghouse Electric and Manufacturing Co.		
Edward Roe Stamps,	B.E. 1903,	Macon, Ga.
Superintendent F. S. Royster Guano Co.		
Harris Ingram Stanback,	B.E. 1910,	Newark, N.J.
Experimenter General Electric Co.'s Lamp Works at Harrison, N. J.		
Numa Reid Stansel,	B.S. 1898,	Schenectady, N. Y.
E.E. 1901. Electrical Engineer General Electric Co.		
Thomas Barnes Stansel,	B.S. 1910,	West Raleigh, N. C.
Assistant in Soil Bacteriology, N. C. Agricultural Experiment Station.		
Alexis Preston Steele,	B.S. 1899,	Statesville, N. C.
Mechanical Engineer, Firm of J. C. Steele & Sons.		
Hugh Stuart Steele,	B.E. 1909,	Knight's Key, Fla.
Engineering Department Florida East Coast Railway.		
Samuel Fatio Stephens,	B.E. 1909,	Norfolk, Va.
Civil Engineer.		
George Yates Stradley,	B.E. 1903,	Roanoke, Va.
Structural Draftsman, Virginia Iron and Bridge Co.		
John Snipes Stroud,	B.E. 1908,	Concord, N. C.
Locke Cotton Mills.		
Walter Stephen Sturgill,	B.E. 1901,	Fort Riley, Kan.
Student Officer, Mounted Service School. First Lieutenant Regiment of Field Artillery.		
William Clark Styron,	B.E. 1910,	Raleigh, N. C.
Caraleigh Fertilizer Works.		
Teisaku Shugishita, ‡	B.S. 1898,	Japan.
Beverly Nathaniel Sullivan,	B.S. 1901,	Winston-Salem, N. C.
Superintendent Winston-Salem Light and Fuel Co.		
Thomas Bryan Summerlin,	B.E. 1910,	Great Falls, S. C.
Republic Cotton Mills.		

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‡Not heard from this year.

Name.	*Degree.*	*Address.*
HENERY NEWBOLD SUMNER, Lieutenant Coast Artillery Corps, U. S. Army.	B.E. 1909,	Fort McDade, Fla.
VANCE SYKES, Assistant Engineer (Civil Dept.) S. A. L. Ry.	B.E. 1907,	Raleigh, N. C.
GEORGE FREDERICK SYME, Assistant Engineer, Seaboard Air Line Railway.	B. S. 1898, C.E. 1907.	Raleigh, N. C.
WILLIAM ANDERSON SYME, †	B.S. 1899, M.S. 1903.	Raleigh, N. C.
FREDDIE JACKSON TALTON, Farmer.	B.Agr. 1906,	Pikeville, N. C., R. 2.
CLAUDE STRATTON TATE, Assistant Superintent Lans Lumber Co.	B.E. 1909,	Norlina, N. C.
JAMES CLARENCE TEMPLE, Bacteriologist Georgia Experiment Station.	B.S. 1904, M.S. 1908.	Experiment, Ga.
MALVERN HILL TERRELL, Engineer U. S. Post Office and Court House.	B.E. 1909,	Atlanta, Ga.
FRANK MARTIN THOMPSON,	B.E. 1910,	Raleigh, N. C.
THOMAS HAMPTON THOMPSON, Cashier Southern Railway.	B.E. 1910,	Thomasville, N. C.
BUXTON WILLIAMS THORNE, †	B.E. 1893,	Holly Springs, Miss.
LUTHER RUSSELL TILLETT, † Assistant Engineer, Moro Province.	B.E. 1907,	Zamboanga, P. I.
RICHARD HENRY TILLMAN Industrial Engineer Consolidated Gas, Electric Light and Power Co. of Baltimore.	B.E. 1906,	Baltimore, Md.
WILLIAM SIDNEY TOMLINSON, Draughtsman Norfolk Southern Railway.	B.E. 1906,	Portsmouth, Va.
JAMES EDWIN TOOMER, Assistant State Chemist.	B.S. 1909,	Clemson College, S. C.
CHARLES EDWARD TROTTER, †	B.S. 1903,	Franklin, N. C.
WILLIAM BROOKS TRUITT, Standard Boiler and Machine Co.	B.E. 1907,	Greensboro, N. C.
ISAAC NORRIS TULL, Testing Department General Electric Co.	B.E. 1910,	Schenectady, N. Y.
REID TULL, ‡ Assistant Engineer, Winston-Salem Southbound Railway.	B.E. 1906,	Winston-Salem, N. C.
JOHN EDWIN TURLINGTON, Graduate Student Cornell University.	B.Agr. 1907,	Ithaca, N. Y.

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†Deceased.

‡Not heard from this year.

Name.	*Degree.*	*Addrsss.*
Joseph Platt Turner, ‡ Vice-President and Superintendent Lily Mills.	B.E. 1902,	Spray, N. C.
William Harrison Turner, Wholesale Mill Feed, Hay and Grain.	B.E. 1893,	Winston-Salem, N. C.
Jackson Corpening Tuttle, Engineering Department, General Electric Co.	B.E. 1906,	Schenectady, N. Y.
Robert Peele Uzzell, ‡ Farmer.	B.Agr. 1906,	Goldsboro, N. C.
Peter Valear, Jr., Assistant Chemist Bureau Internal Revenue.	B.S. 1906,	Washington, D. C.
Lillian Lee Vaughn, Graduate Student Columbia University. Home Address, Franklin, Va.	B.E. 1906, M.E. 1909.	New York City.
Solomon Alexander Vest, Secretary and Treasurer The Smith Laboratory,	B.S. 1900 (Chem.) B.Agr. 1901.	Mt. Pleasant, Tenn.
Sylvester Murray Viele, Pennsylvania Railroad Company.	B.E. 1905,	Altoona, Pa.
John Lawrence Von Glahn, Civil Engineer with C. R. Humphreys, C.E.	B.E. 1908,	Wilmington, N. C.
Roscoe Marvin Wagstaff, Engineering Draftsman U. S. Navy Department.	B.E. 1900,	Norfolk, Va.
Joseph Kendall Waitt, Chief Engineer Prairie Pebble Phosphate Co.	B.E. 1904,	Mulberry, Fla.
Walter Jennings Walker, ‡ General Electric Co. Home Address, Winston-Salem, N. C.	B.E. 1905,	Schenectady, N. Y.
Steven Dockery Wall, †	B.E. 1905,	Rockingham, N. C.
Charles Emmette Walton, Florida East Coast Railway.	B. E.1910,	Jacksonville, Fla.
Benjamin Franklin Walton, Farmer.	B.S. 1894,	Raleigh, N. C., R. 1.
Edmund Farris Ward, Abell & Ward, Lawyers.	B.Agr. 1907,	Smithfield, N. C.
Hugh Ware, Farmer.	B.S. 1899,	Kings Mountain, N. C.
Charles Augustus Watson, †	B.S. 1901,	Raleigh, N. C.
Jordan Lea Watson, District Manager, Allis-Chalmers Co.	B.S. 1897, M.E. 1899.	Atlanta, Ga.
Walter Wellington Watt, Jr., Engineer and Salesman Saco-Pettee Co.	B.E. 1905,	Charlotte, N. C.

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†Deceased.
‡Not heard from this year.

Name.	*Degree.*	*Address.*
Lindsay Marade Weaver, Dacotah Cotton Mills, Inc.	B.E. 1907,	Lexington, N. C.
Marion Emerson Weeks, Draftsman Navy Department, Bureau of Steam Engineering.	B.E. 1904,	Washington, D. C.
Howard Waldo Welles, Jr., Commercial Engineering Department, General Electric Co., of Harrison, N. J.	B.E. 1910,	Newark, N. J.
John Jackson Wells, Civil Engineer.	B.E. 1907,	Rocky Mount, N. C.
Cleveland Douglas Welsh, Carder and Spinner, Mayes Manufacturing Co.	B.E. 1902,	Mayesworth, N. C.
Albert Clinton Wharton, Jr., Stock Farmer.	B.S. 1904,	Clemmons, N. C.
David Lyndon White, ‡ Dairyman, Greensboro Creamery.	B.Agr. 1907,	Greensboro, N.C., R. 2.
Jonathan Winborne White, Assistant Chemist, Pennsylvania Agricultural Experiment Station.	B.S. 1903,	State College, Pa.
Royall Edward White, Engineer.	B.E. 1908,	Aulander, N. C.
Cecil Bernard Whitehurst, Salesman Western Electric Co. of Pittsburg, Pa.	B.E. 1907,	Wilkinsburg, Pa.
Joseph Slaughter Whitehurst, Civil Engineer with Louisville and Nashville R. R. Home Address, Elizabeth City, N. C.	B.E. 1909,	Crofton, Ky.
Edwin Seymore Whiting, †	B.E. 1903,	Hamlet, N. C.
Gaither Hall Whiting, †	B.S. 1900,	Richmond, Va.
Levi Romulus Whitted, Superintendent of Construction U. S. Public Buildings With U. S. Treasury Department.	B.S. 1896, C.E. 1897.	Washington, D. C.
Archie Carraway Wilkinson, Assistant Engineer, Adams Engineering Co.	B.E. 1905,	Oklahoma City, Okla.
Charles Burgess Williams, Director N. C. Experiment Station.	B.S. 1893, M.S. 1896.	West Raleigh, N. C.
Claude B. Williams, Physician. City Health Officer.	B.S. 1899,	Elizabeth City, N. C.
Henry Lloyd Williams, Mill Superintendent Cofield Manufacturing Co.	B.S. 1896,	Cofield, N. C.
John C. Williams, Draftsman Central of Georgia Railway.	B.E. 1908,	Savannah, Ga.
John Harley Williams, Educational and Membership Secretary Railroad Y. M. C. A.	B.E. 1906,	Hoisington, Kan.

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†Deceased.
‡Not heard from this year.

Name.	*Degree.*	*Address.*	
Arthur John Wilson,	B.S. 1907,	Ithaca, N. Y.	M.S. 1908. Assistant in Chemistry, Cornell University.
John McCamy Wilson,	B.E. 1894,	Clinton, S. C.	Mechanical and Electrical Engineer Clinton Mills Co.
John Spicer Wilson,	B.E. 1909,	Chicago, Ill.	Engineer in Distributing Department, Commonwealth-Edison Co.
Edward Leigh Winslow,	B.E. 1910,	Hertford, N. C.	National Railways of Mexico, Home address, Hertford, N. C.
Lewis Taylor Winston,	B.Agr. 1906,	Proctor, N. C.	Cashier and Bookkeeper W. M. Ritter Lumber Co.
Howard Wiswall, Jr.,	B.E. 1895,	Charleston, S. C.	Civil Engineer and Surveyor.
Paul Adams Witherspoon,	B.E. 1909,	South Bethlehem, Pa.	Student at Lehigh University.
Bradley Jewett Wooten, †	B.S. 1897,	Wilmington, N. C.	
Benjamin Vaden Wright,	B.E. 1901,	Laurel, Miss.	Engineer of Maintenance of Way, N. O. M. & C. R. R.
Robert Job Wyatt,	B.E. 1909,	Raleigh, N. C.	Salesman and Stockholder Job P. Wyatt & Sons Co.
Charles Garrett Yarbrough,	B.E. 1895,	Chicago, Ill.	Electrical Engineer, Westinghouse Electric and Manufacturing Co.
Louis Thomas Yarbrough,	B.E. 1893,	Raleigh, N. C.	Register Clerk Raleigh Post Office.
Woodfin Bradsher Yarbrough,	B.E. 1908,	McIver, N. C.	Farmer.
Samuel Marvin Young,	B.E. 1893,	Raleigh, N. C.	Traveling Salesman, Supplee Hardware Co. of Philadelphia.
John Franklin Ziglar,	B.E. 1908,	Winston-Salem, N. C.	Transitman, Winston-Salem South Bound Railway.

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†Deceased.

THE

NORTH CAROLINA COLLEGE

OF

AGRICULTURE AND MECHANIC ARTS

WEST RALEIGH

1911-1912

OCTOBER 3, 1889

RALEIGH
E. M. Uzzell & Co., State Printers and Binders
1912

CALENDAR.

1912.

JANUARY.

S.	M.	T.	W.	T.	F.	S.
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1913.

JANUARY.

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MAY.

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JUNE.

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COLLEGE CALENDAR.

1912.

Thursday,	July	11.	Entrance examination at each county courthouse, 10 A. M.
Wednesday,	September	4.	Entrance examination at the College, 8:30 A. M.
Wednesday,	September	4.	Examinations to remove conditions.
Thursday,	September	5.	First Term begins; Registration Day.
Thursday,	November	28.	Thanksgiving Day.
Wednesday,	December	18.	First Term ends.

1913.

Wednesday,	January	1.	Second Term begins; Registration Day.
Saturday,	March	15.	Second Term ends.
Monday,	March	17.	Third Term begins.
Sunday,	May	25.	Baccalaureate Sermon.
Monday,	May	26.	Alumni Day. Annual oration.
Tuesday,	May	27.	Commencement Day.

BOARD OF TRUSTEES.

Governor William Walton Kitchin, *ex officio Chairman.*

Name.	*Postoffice.*	*Term Expires.*
J. O. Ellington	Fayetteville	March 20, 1913.
W. E. Daniel	Weldon	March 20, 1913.
W. H. Ragan	High Point	March 20, 1913.
W. B. Cooper	Wilmington	March 20, 1913.
M. B. Stickley	Concord	March 20, 1915.
T. T. Ballenger	Tryon	March 20, 1915.
N. B. Broughton	Raleigh	March 20, 1915.
O. L. Clark	Clarkton	March 20, 1915.
Everett Thompson	Elizabeth City	March 20, 1917.
R. H. Ricks	Rocky Mount	March 20, 1917.
O. Max Gardner	Shelby	March 20, 1917.
M. L. Reed	Biltmore	March 20, 1917.
E. M. Koonce	Jacksonville	March 20, 1919.
C. W. Gold	Raleigh	March 20, 1919.
T. E. Vann	Como	March 20, 1919.
D. A. Tompkins	Charlotte	March 20, 1919.

EXECUTIVE COMMITTEE.

W. H. Ragan, *Chairman.*

R. H. Ricks,

M. B. Stickley.

C. W. Gold, *Secretary.*

N. B. Broughton.

FACULTY AND OFFICERS.

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President.

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Professor of Civil Engineering and Vice President.

WILLIAM ALPHONSO WITHERS, A.M.,
Professor of Chemistry.

ROBERT E. LEE YATES, A.M.,
Professor of Mathematics.

THOMAS NELSON,
Professor of Textile Industry.

CLIFFORD LEWIS NEWMAN, M.S.,
Professor of Agriculture.

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Professor of Physics and Electrical Engineering.

HOWARD ERNEST SATTERFIELD, M.E.,
Professor of Mechanical Engineering.

THOMAS PERRIN HARRISON, Ph.D.,
Professor of English and Dean of the College.

GUY ALEXANDER ROBERTS, B.S., D.V.S.,
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IRA OBED SCHAUB, B.S.,
Professor of Agricultural Extension.

WILLIS GRANDY PEACE, Captain U. S. A.,
Professor of Military Science and Tactics.

JOHN CHESTER McNUTT, B.S.A.,
Professor of Animal Husbandry and Dairying.

JOSHUA PLUMMER PILLSBURY, B.S.,
Professor of Horticulture.

HARRY RASCOE FULTON, M.A.,
Professor of Botany and Vegetable Pathology.

MELVIN ERNEST SHERWIN, B.S.A., M.S.,
Associate Professor of Soils.

ZENO PAYNE METCALF, B.A.,
Associate Professor of Zoölogy and Entomology.

BARTHOLOMEW MOORE PARKER, B.S.,
Assistant Professor of Textile Industry.

CARROLL LAMB MANN, B.S., C.E.,
Assistant Professor of Civil Engineering.

GEORGE SUMMEY, Jr., Ph.D.,
Assistant Professor of English.

WELDON THOMPSON ELLIS, B.E., M.E.,
Assistant Professor of Mechanical Engineering.

LEON FRANKLIN WILLIAMS, A.B., A.M., Ph.D.,
Assistant Professor of Chemistry.

HENRY K. McINTYRE, B.E.,
Assistant Professor of Physics and Electrical Engineering.

CHARLES BENJAMIN PARK,
Instructor in Machine Shop.

JOHN STRAUCHON JEFFREY,
Instructor in Poultry Husbandry.

ABRAHAM RUDY, A.M., Pd.D.,
Instructor in Modern Languages.

WILEY THEODORE CLAY, B.E.,
Instructor in Woodworking and Pattern-making.

JOHN EDWARD HALSTEAD, B.S.,
Instructor in Dyeing.

HERBERT NATHANIEL STEED,
Instructor in Weaving and Designing.

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FRED BARNETT WHEELER,
Instructor in Forge.

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Instructor in Shop and Drawing.

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Instructor in Mathematics.

VERGIL CLAYTON PRITCHETT, M.S.,
Instructor in Physics.

WARREN CARNEY NORTON, Ph.B.,
Instructor in Bacteriology.

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Instructor in Civil Engineering.

HARRY TUCKER, B.A., B.S.,
Instructor in Mathematics and Civil Engineering.

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Instructor in Horticulture.

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Instructor in English.

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Instructor in Mechanical Engineering Laboratory.

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Instructor in Veterinary Science.

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Instructor in Poultry Husbandry.

WILLIAM FRANKLIN PATE, B.S.,
Instructor in Chemistry.

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Instructor in Chemistry.

EDSON DANA SANBORN, B.S.,
Instructor in Dairying.

WILLIAM PIPER ANGEL, B.A., M.A.,
Instructor in Mathematics.

DUANE B. ROSENKRANS, A.B.,
Instructor in Botany.

BENNETT THOMAS SIMMS, D.V.M.,
Assistant in Anatomy and Physiology.

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Instructor in Drawing.

EDGAR ALLAN HODSON, B.S.,
Instructor in Agronomy.

THOMAS FRANKLIN PARKER, M.S.,
Assistant in Agricultural Extension.

MRS. CHARLES McKIMMON,
Assistant in Agricultural Extension.

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Registrar.

ARTHUR FINN BOWEN,
Bursar.

HENRY McKEE TUCKER, M.D.,
Physician.

ARTHUR BUXTON HURLEY,
Steward.

MRS. CHARLOTTE M. WILLIAMSON,
Librarian.

MRS. ELLA I. HARRIS,
Hospital Matron.

JOHN WESLEY BERGTHOLD,
General Secretary of the Young Men's Christian Association.

EDWARD L. GREENE,
Athletic Director.

MISS ISABEL BRONSON BUSBEE,
Stenographer.

MISS KATHERINE JOSEPHINE MACKAY,
Stenographer.

MISS LUCILE ANDERSON,
Stenographer.

MISS MARY BLEDSOE,
Stenographer.

STAFF OF NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION.

DANIEL HARVEY HILL, A.M., LL.D.,
President.
CHARLES BURGESS WILLIAMS, B.S., M.S.,
Director and Agronomist.
WILLIAM ALPHONSO WITHERS, A.M.,
Chemist.
JOHN STRAUCHON JEFFREY,
Poultryman.
ROBERT SETH CURTIS, B.S.,
Animal Husbandman.
JOSHUA PLUMMER PILLSBURY, B.S.,
Horticulturist.
GUY ALEXANDER ROBERTS, D.V.S.,
Veterinarian.
ZENO PAYNE METCALF, B.A.,
Entomologist.
HARRY RASCOE FULTON, M.A.,
Vegetable Pathologist and Bacteriologist.
WILLIAM CARLYLE ETHERIDGE, B.Agr., M.S.,
Associate Agronomist.
BURTON JUSTICE RAY, A.B., Ph.D.,
Assistant Chemist.
ALEXANDER RICHARDSON RUSSELL,
Assistant in Field Experiments.
LEWIS REINHOLD DETJEN, B.S.A., M.S.,
Assistant Horticulturist.
GUY WEST WILSON, B.S., A.M.,
Assistant in Vegetable Pathology.
THOMAS BARNES STANSEL, B.S.,
Assistant Chemist.
CHARLES EDWARD BELL, B.S.,
Assistant Bacteriologist.
ARTHUR FINN BOWEN,
Bursar.
MISS NELLIE FORT,
Stenographer.
MISS LOULA V. SHERWOOD,
Secretary and Stenographer.

MILITARY ORGANIZATION.

Commandant of Cadets.

CAPTAIN WILLIS G. PEACE, United States Army.

Cadet Major.

O. W. SMITH.

Battalion Staff.

C. HORN, First Lieutenant and Adjutant.
S. B. HOWARD, First Lieutenant and Adjutant.
W. T. SHULL, First Lieutenant and Quartermaster.

Noncommissioned Staff.

H. A. QUICKEL, Sergeant-Major.
R. D. GOODMAN, Quartermaster Sergeant and Color Sergeant.
J. O. RANKIN, Chief Trumpeter.

Band.

J. E. McGEE, Captain.
McN. DuBOSE, First Lieutenant.
R. F. GIERSCH, First Lieutenant.
C. M. TAYLOR, Second Lieutenant.
W. D. SIMPSON, Sergeant.
G. L. ARTHUR, Jr., Sergeant.
W. L. JEWELL, Corporal.
J. F. SCHENCK, Jr., Corporal.
W. V. PEARSALL, Corporal.
W. D. LEWIS, Corporal.

Company A.

H. M. WALTON, Captain.
C. E. BROWN, First Lieutenant.
R. W. HOWELL, Second Lieutenant.
J. B. COWARD, First Sergeant.
G. E. KIDD, Sergeant.

T. R. PARRISH, Sergeant.
A. C. WILSON, Sergeant.
T. B. WILLIAMS, Sergeant.
W. H. GRIFFIN, Sergeant.
K. M. FETZER, Corporal.
D. D. COX, Corporal.
P. H. PARK, Corporal.
D. A. LEARD, Corporal.
J. R. FRANCK, Corporal.
W. H. SMITH, Corporal.
W. T. SHAW, Corporal.

Company B.

H. P. WHITTED, Captain.
W. R. MANN, First Lieutenant.
C. M. NEWCOMB, Second Lieutenant.
F. S. HALES, First Sergeant.
F. W. McCOMB, Sergeant.
A. B. CLEMENT, Sergeant.
J. D. JOYNER, Sergeant.
S. K. KELLER, Sergeant.
P. A. HOLT, Sergeant.
W. C. LASSITER, Sergeant.
J. H. WARD, Corporal.
J. R. TOWNSEND, Corporal.
V. W. BREEZE, Corporal.
F. L. CRAWFORD, Corporal.
J. E. McNEELY, Corporal.
J. C. MURCHISON, Corporal.

Company C.

G. L. THOMPSON, Captain.
L. N. RIGGAN, First Lieutenant.
A. K. ROBERTSON, Second Lieutenant.

H. B. BRIGGS, First Sergeant.
E. C. LATHAM, Sergeant.
J. O. RANKIN, Sergeant.
L. L. MERRITT, Sergeant.
E. J. JEFFRESS, Sergeant.
W. H. SULLIVAN, Sergeant.
E. H. WEATHERSPOON, Corporal.
D. M. TATE, Corporal.
J. HARVEY, Corporal.
C. R. BAILEY, Corporal.
R. A. GILL, Corporal.
W. L. MOODY, Corporal.

Company D.

F. B. SHERWOOD, Captain.
W. H. GRAHAM, First Lieutenant.
C. A. STEDMAN, Second Lieutenant.
W. H. PARKER, First Sergeant.
W. R. CLEMENTS, Sergeant.
C. S. ANDREWS, Sergeant.
J. J. PHILLIPS, Sergeant.
W. B. STOVER, Sergeant.
M. S. WHITE, Sergeant.
O. Z. WRENN, Corporal.
J. E. FEREBEE, Corporal.
S. J. COX, Corporal.
E. C. BLAIR, Corporal.
G. D. BURROUGHS, Corporal.
F. B. MORTON, Corporal.

Company E.

C. W. LEE, Captain.
R. C. DEAL, First Lieutenant.
J. G. KELLOGG, Second Lieutenant.

G. L. BAIN, First Sergeant.
W. T. NIXON, Sergeant.
G. T. ROWLAND, Sergeant.
T. R. HART, Sergeant.
L. L. DAIL, Sergeant.
R. S. MAUNEY, Sergeant.
B. O. AUSTIN, Corporal.
J. W. ROSS, Corporal.
H. BURLESON, Corporal.
J. C. BRANTLEY, Corporal.
J. B. REES, Corporal.
F. H. HOUCK, Corporal.

Company F.

R. M. HARDISON, Captain.
A. W. TAYLOR, First Lieutenant.
H. L. TAYLOR, Second Lieutenant.
T. J. HEWITT, First Sergeant.
C. F. GORE, Sergeant.
L. C. HAND, Sergeant.
R. T. MELVIN, Sergeant.
E. D. BOWDITCH, Sergeant.
H. K. NASH, Corporal.
J. FONTAINE, Corporal.
J. I. NEAL, Corporal.
C. M. KEPHART, Corporal.
J. R. BUCHANAN, Corporal.
D. E. ROBERTS, Corporal.
P. MALLETT, Corporal.

GENERAL INFORMATION.

The North Carolina College of Agriculture and Mechanic Arts owes its existence to the combined liberality of the United States Government and of R. S. Pullen, of Raleigh, together with the patriotic efforts of a few far-sighted men who saw that in the industrial life of North Carolina the time had come when trained and educated leaders were necessary. The first act of the General Assembly of this State in relation to the College was ratified in 1885, the bill, which afterwards became a law, having been introduced by A. Leazar, Esq. The Congress of the United States in 1862 passed a bill, introduced by Senator Justin S. Morrill, of Vermont, giving to each State public lands "for the endowment, support, and maintenance of at least one college, whose leading object shall be, without excluding other scientific and classical studies and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

The income from this grant, amounting to $7,500 annually, was appropriated in 1887 by the Legislature of the State for the establishment and yearly maintenance of this College. Sufficient land for the College site and farm was given by the late R. S. Pullen. The College was formally opened for students October 1, 1889.

Additional funds were provided afterwards by the National Congress by the "supplemental Morrill Act" of 1890 and the "Nelson Act" of 1907, and by State appropriations.

The College is beautifully located on the extension of Hillsboro Street in the western suburbs of Raleigh, a mile and a quarter from the State Capitol. The site is suitable in all respects.

There is an abundant supply of water from the city mains and from twelve deep wells on the College grounds. The water is analyzed, both chemically and bacteriologically, at regular periods.

The College now owns four hundred and eighty-five acres of land. Fifteen hundred young trees and nine hundred and forty vines are growing in an orchard of sixteen acres. Seven acres are devoted to truck growing. The campus consists of about thirty acres of rolling land, which is being improved as rapidly as circumstances permit.

BUILDINGS.

The buildings, numbering twenty-six in all, of the College are grouped as follows: the academic buildings; the social life buildings; and the farm buildings.

I. The academic buildings are as follows:

1. **Holladay Hall.**—This, the administration building of the College, is of brick with brown stone trimmings. It is 170 feet long by 64 feet deep; part of the building is four stories and the remainder two. The first floor is devoted to the lecture-rooms and laboratories of the Physics Department. The second floor contains the offices of the President, the Dean of the Faculty, the Commandant, Registrar, and the Bursar. In addition, six lecture-rooms are located on this floor. The upper stories are used by students.

2. **Patterson Hall.**—This is the largest of the Agricultural buildings. It is a three-story buff press-brick structure, with granite trimmings, and is 204 feet long by 74 deep. The basement floor contains a very commodious dairy with wash-rooms and sterilization chamber. It also contains mailing rooms for bulletins, a large hall for examination of animals. The second floor provides room for the offices of the Experiment Station, for offices, lecture-rooms, and laboratories for the departments of Agronomy, Horticulture, Soils, and Agricultural Extension. On the third floor are the rooms devoted to the offices, lecture-rooms, and laboratories of the departments of Botany, and Plant Pathology, and of Physiology and Veterinary Medicine. This building contains excellently equipped laboratories, and is well lighted and ventilated. Each section of the building was designed for its specific function and hence admirably meets the requirements of these departments.

3. **Animal Industry Building.**—In order to meet the growing needs of the Agricultural division of the College, a building for the Animal Industry Department is just being completed. This is a three-story brick structure, and has white brick and cement trimmings. One-half of the first floor will be given to the Poultry Department. The other half is devoted to a stock-judging room. The offices, lecture-rooms, and laboratories of the Animal Industry Department take up all the second floor. The third floor is assigned to the Department of Entomology and Zoölogy. In addition to offices and laboratories, this floor will contain photographic room and museum.

4. **Winston Hall.**—This is the Civil and Electrical Engineering building. It is built of brick, with reinforced concrete floors, three stories high, including the basement. It consists of a main section,

104 by 58 feet, with two wings, each 91 by 32 feet. The basement contains the laboratories and instrument rooms of the departments of Electrical and Civil Engineering. The main floor has the lecture, recitation, and drafting rooms and the offices of the same two departments. The second floor contains the lecture and recitation rooms and the laboratories and offices of the Department of Chemistry and the Chemical Department of the State Experiment Station.

5. **Mechanical Engineering Building and Machine Shops.**—A plain, substantial, two-story brick building furnishes room for the machine shop, the wood shop, the forge shop, the tool room of the Mechanical Department. In the same building are housed the mechanical laboratory, the drawing-rooms, lecture-rooms, and offices of this department.

6. **Textile Building.**—This is a two-story brick building 125 by 75 feet, with a basement. Its construction is similar to a cotton mill, and is an illustration of standard construction in this class of buildings. The basement contains the dyeing department, the first floor the looms and warp preparation machinery, and the second floor the carding and spinning machinery.

7. **Central Power Plant.**—Heat, light, and power for all the College buildings are furnished from this central station. The boiler plant consists of two 75-horse-power Babcock and Wilcox boilers and two 100-horse-power Atlas Water-tube boilers, with a working steam pressure of 150 pounds. The engine plant embraces a 100-horse-power Skinner engine and a Crocker-Wheeler generator attached; a 100 k. w. DeLaval turbine generator set with self-exciter; and steam and vacuum pumps for feeding the boilers and maintaining circulation in steam-heating apparatus. The buildings are equipped with Warren-Webster system of heating.

The Fire Protection of the College consists of the following equipment: An Underwriter fire pump, standpipe and reservoir, hose and hose reels. Hydrants are conveniently located about the grounds, with attached hose nozzles, etc. The buildings are supplied with extinguishers.

8. **Foundry.**—Is a one-story brick building with a brick stack. It contains a 36-inch cupola furnace; a Griffin oil furnace for melting iron; another for brass, and a small crucible furnace for brass melting; a core oven, and benches and hand tools for moulding in the course of exercises, as well as for any repair work required by the College.

II. The social life buildings are as follows:

1. **Pullen Hall.**—The basement of this large three-story colonial brick building will, after this year, be used as an armory. The first floor gives quarters for a splendidly lighted reading-room and library and two lecture-rooms. The second story serves as the college auditorium and seats about one thousand people.

2. **Primrose Hall** and the new **Y. M. C. A. Building.**—At present Primrose Hall is used for the Young Men's Christian Association home. The Association has, however, just let a contract for a handsome building that will be erected this summer, and devoted exclusively to the social and religious life of the College.

3. **Dining Hall.**—The College will complete in the early spring a dining hall which will seat seven hundred and fifty students. This building is 144 feet by 54 feet. It is trimmed with Indiana limestone and white brick. Attached to this dining hall is a large kitchen which is being supplied with a complete modern outfit of kitchen conveniences and utensils. Serving rooms, storerooms, preparation rooms, and every needful adjunct have been provided.

4. **Infirmary.**—This is a two-story brick building, containing a sitting-room, seven bedrooms, three bathrooms, a kitchen, linen-room, the College Physician's office, and a medicine chest. The rooms are large, well-ventilated, well lighted, and heated by steam. Each room opens upon a large, pleasant portico. The furnishing and equipment of the rooms are such as are used in modern hospitals.

5. **Watauga Dormitory.**—Rooms for one hundred and thirty students are provided by this three-story brick dormitory. A large bathroom is located in the basement of this dormitory.

6. **Nineteen-Eleven Dormitory.**—This is the largest and most complete dormitory on the grounds. It is divided into sections by fireproof walls, and each section is practically a separate house. It furnishes rooms for two hundred and forty students. Large and convenient bathrooms are located in the basement of the building.

7. **First Dormitory.**—This two-story brick dormitory has ten rooms and affords accommodations for twenty students.

8. **Second Dormitory.**—Built on the same plan as the First Dormitory, this building affords a college home for twenty students.

9. **Third Dormitory.**—Twenty students also find rooms in this small dormitory.

10. **Fourth Dormitory.**—This is a three-story, mansard-roofed brick structure, and furnishes rooms for forty-eight students.

III. The farm buildings constitute the third group of college buildings. These are as follows:

1. A large sanitary dairy barn with stalls and feed-rooms for fifty cows. This barn is abundantly aired and lighted, is equipped with James sanitary fixtures, and has cement floors.

2. A barn for the work stock. Stalls for most of the work animals and some overhead storage are supplied by this barn.

3. A storage barn. This barn gives storage for feedstuffs for the dairy and is also equipped with stalls for the Percheron horses.

4. A fertilizer and implement barn. The College is just completing a commodious barn in which to provide room for instruction in mixing fertilizers and to store the farm implements and machines.

5. The Experiment Station barn. This convenient building is located on the College farm and houses the work stock of the station.

6. A calf barn. The young stock of the College are provided with separate stalls and feeding rooms in a comfortable building on the farm site.

7. The foreman's home. A cottage near the barns is occupied by the foreman of the College farm and by the herdsman.

8. The Horticulturist's home. In order that he may be near his work, the Horticulturist is provided with a home in the center of the orchard.

THE AGRICULTURAL EXPERIMENT STATION.

The North Carolina Agricultural Experiment Station is a department of the College. It was established originally as a division of the State Department of Agriculture, in accordance with an act of the General Assembly ratified March 12, 1877. Its work was greatly promoted by act of Congress of March 2, 1887, which made a liberal donation to each State for the purpose of investigations in agriculture and for publishing the same. The bill, which subsequently became a law, was introduced by Representative William H. Hatch of Missouri. The funds of the Experiment Station were supplemented by the act of Congress of March 16, 1906, known as the "Adams Act."

The Director's office is in Patterson Hall. The laboratories are, some of them, in the same building; the rest are in Winston Hall. The experimental work in agriculture, horticulture, stock and poultry raising, and dairying is conducted on the College farm, and the investigations in plant diseases and chemistry are made in the College laboratories.

The Station is always glad to welcome visitors and to show them the work in progress. The Station conducts a large correspondence with farmers and others concerning agricultural matters. It takes pleasure in receiving and answering questions.

Bulletins relating to general farming matters and embodying the results of experiments are published and sent free to all citizens of the State who request them. A request addressed to the Agricultural Experiment Station, West Raleigh, N. C., will bring these publications and answers to letters.

Arrangements are now being perfected to combine the Station with the experimental work of the State Department of Agriculture, and hereafter the work of College and State Department will be done together.

THE PURPOSE OF THE COLLEGE.

The College is an institution where young men of character, energy, and ambition may fit themselves for useful and honorable work in many lines of industry in which training and skill are requisite to success. It is intended to train farmers, mechanics, engineers, architects, draughtsmen, machinists, electricians, miners, metallurgists, chemists, dyers, mill workers, manufacturers, stock raisers, fruit growers, truckers, and dairymen, by giving them not only a liberal, but also a special education, with such manual and technical training as will qualify them for their future work.

It offers practical and technical education in Agriculture, Horticulture, Animal Industry, Civil Engineering, Mechanical Engineering, Electrical Engineering, Mining Engineering, Chemistry, Dyeing, Textile Industry, and Agriculture. It also offers practical training in Carpentry, Woodturning, Blacksmithing, Machinist's work, Mill work, Boiler tending, Engine tending, Dynamo tending and Installation, Electric-light Wiring, Armature Winding, and other subjects relating to practical electricity.

Although the leading purpose of the College is to furnish technical and practical instruction, yet other subjects essential to a liberal education are not omitted. Thorough instruction is given in English, Mathematics, Political Economy, Physics, Chemistry, Botany, Zoölogy, Physiology, and Geology.

The College is not a place for young men who desire merely a general education without manual or technical training, nor for lads lacking in physical development, mental capacity, or moral fiber, nor for those who are unable or unwilling to observe regularity, system, and order in their daily work.

WHAT THE COLLEGE EXPECTS OF ITS STUDENTS.

The College does not have many rules. It expects that its students will live rightly for their own sakes and for the sake of the State that is educating them. The fundamental law of the College is this: Always and everywhere, be a gentleman.

A record is kept of every student. If it is apparent from this record that a student is not studying or that his conduct is not meeting the requirements of the College, such student will be required to withdraw. Scandalous, vicious, or immoral conduct will necessitate an immediate dismissal.

Students attend this College, of course, to fit themselves for a technical business life. They are therefore expected to be businesslike in their habits; to be prompt in their attendance and regular at chapel, classes, shops, drills, inspections, and all other duties. To prepare themselves for their daily work, students are expected to observe in their own rooms the regular morning and evening hours of study and to be absent from College only at the regularly specified periods. These periods are as follows: For Juniors, Friday, Saturday, and Sunday nights; for Sophomores, Saturday and Sunday nights; for Freshmen, Sunday nights. Saturday and Sunday afternoons are liberty afternoons.

Students are expected to keep their rooms neat and sanitary; to refrain from disturbing one another by noise in the buildings or on the grounds—in short, to conduct themselves in their College home with the same courtesy, self-respect, and propriety that they do in their own homes.

Visiting poolrooms, leaving College after 11 o'clock at night, continued cigarette smoking, willful destruction of College property, drinking, immorality, gambling in all forms, hazing of any kind, disrespect to members of the Faculty or officers of the College, any conduct unbecoming a gentleman—these offenses it is expected that a student's self-respect will lead him to abstain from, and should any student be found guilty of them he will be excluded from College.

REPORTS AND SCHOLARSHIP.

Regular reports of scholarship and conduct are sent to parents and guardians at the end of each term. Special reports are made whenever necessary. Students who are persistently neglectful of duty, or manifestly unable to do the work required, will be discharged at any time. The Faculty will require any student to withdraw whenever it is plain that his stay in the institution is not profitable to himself nor to the College.

PRIZES.

The North Carolina State Fair Association offers a prize of $5 to the student preparing the best essay on the Live-stock Exhibit at the State Fair.

A gold medal is awarded to the Senior speaker who makes the best oration on Commencement Day.

The National Association of Cotton Manufacturers offers annually a medal to the student in the Textile Department who has the highest proficiency in his work.

RELIGIOUS INFLUENCES.

All students are required to attend chapel exercises in Pullen Auditorium each morning. These services are conducted by the President, by some member of the Faculty, or by some visiting minister or layman.

Each student is expected to attend religious service in Raleigh on Sunday morning at the church of his choice. The students are always welcomed in the Sabbath schools of Raleigh, and a large number of them attend these services.

THE YOUNG MEN'S CHRISTIAN ASSOCIATION.

The Young Men's Christian Association is a voluntary organization among the students for the purpose of centralizing and directing the moral and religious life of the student body. The work is under the direction of a General Secretary, who is employed to give his entire time to the work, and of the following student officers: president, vice president, corresponding and recording secretaries, and treasurer. Active assistance is also given by an Advisory Committee, which includes three members of the Faculty and six prominent business men in Raleigh. The president and treasurer of the Association are *ex officio* members of this committee.

Membership is open to all College students of good moral character. Only members of evangelical churches may become active members.

A hand-book, giving general information about the College, is published each spring and sent to prospective students with a personal letter of welcome from the officers of the Association.

A large number of men are trained each year in active Christian service through membership on the following standing committees, all of which are trained by the General Secretary in their particular work: Bible Study Committee, which has charge of the organization of voluntary Bible Study classes among the students, and in this way seeks to reach all of the non-Christian element of the student body; Religious Meetings Committee, which provides speakers and arranges programs for the weekly meetings of the Association: Mission Study Committee, which provides for Mission Study among the students; Membership Committee, which seeks to enlist students as members of the Young Men's Christian Association: Social Committee, which provides means of social entertainment and diversion: Employment Bureau, which seeks to help men find employment while in College: and Finance Committee. Each committee is held responsible for its part of the Association activities.

The Association is supported by gifts from the Board of Trustees, the Faculty, and citizens of the State, and by its regular membership fees. Although membership is voluntary, it is desired that all students should apply for membership and thereby align themselves with an organization which will assist them in leading an upright life while in college.

The Association maintains headquarters in Primrose Hall, which are fitted up with reading matter, small games, etc., and serve as an office for the General Secretary. A suitable building, to cost $40,000, and to be furnished with all modern equipments, is now under construction on the campus. It is expected that this building will be ready for occupation by the first of January.

Any further information may be obtained by addressing the General Secretary, Y. M. C. A., West Raleigh, N. C.

ATHLETICS.

The Athletic Association is organized by the student body to promote physical health and manly spirit through athletic sports. Under the direction of the Athletic Committee of the Faculty, it promotes practice in baseball, basketball, football, track athletics, etc. The Association employs a director who devotes all his time to the interests of this department.

The Athletic Park is situated in the center of the College buildings. It is provided with a grandstand and uncovered seats, and meets amply the needs of the various athletic teams.

LIBRARY AND READING-ROOMS.

The **College Library** occupies the first story of Pullen Hall. The reading-room is supplied regularly with about one hundred and fifty magazines and journals of various kinds, and yearly additions are being made to this number. The library contains about seven thousand five hundred volumes. There are also reference libraries in the different departments. The library is kept open from 9 a. m. to 6 p. m. The Librarian is always present to assist students in finding desired information.

The **Olivia Raney Library** in Raleigh, containing now about eleven thousand five hundred volumes, is free to the students, and they have the privilege of borrowing books from it.

Students are also allowed to consult books in the **State Library.**

STATE MUSEUM.

Students have free access to the large collections of the State Museum. These collections furnish most excellent opportunities for studies in Geology, Mineralogy, Mining, Forestry, and Natural History.

COLLEGE SOCIETIES.

Such college organizations are encouraged as tend to form good character, to develop manly physical vigor, and to promote literary, scientific, and technical research and training.

The Biag Society is composed of those students who have made the best record in biological and agricultural subjects. The membership is limited to twelve. The society meets monthly for the discussion of biological and agricultural questions.

Farmers' Institute.—The students in the Winter Course in Dairying and Agriculture meet every Wednesday night during the winter term for a discussion of practical problems. The meetings are conducted in the manner of a Farmers' Institute, and give training in conducting farmers' meetings, in *ex tempore* speaking on agricultural questions, and in the writing and reading of reports on various farm operations.

The Rural Science Club meets semimonthly for the discussion of agricultural subjects, review of current agricultural publications, and reports on personal experiments and the work of the College farm and Experiment Station.

The Biological Club meets semimonthly for the discussion of biological subjects in their relation to practical agriculture. Students here present results of their own investigations and observations and reviews of the more important current publications, particularly those from the United States Department of Agriculture and the State Experiment Stations.

The Tompkins Textile Society meets every two weeks for the purpose of discussing subjects relating to the textile industry.

The Mechanical Society meets every week for the discussion of mechanical subjects. The society is composed of Seniors and Juniors taking the Mechanical Engineering Course. Its work has proved very beneficial to its members.

Electrical Engineering Society.—A student branch of the American Institute of Electrical Engineers was organized at the College several years ago. It holds regular meetings for the reading and discussion of papers. At convenient intervals the society makes trips for inspecting interesting electrical installations. From time to time addresses are made to the society by visiting engineers.

Berzelius Society meets fortnightly for discussion of chemical topics, and reporting upon the leading articles in the chemical journals.

The Vorwaerts Verein (Forward Society) is a society for the promotion of interest in the study of German. Weekly meetings are held at which literary programs are carried out in German, giving its members practice in expressing themselves in that language. Membership is open to students and members of the Faculty who have acquired sufficient knowledge to understand simple conversation in German.

The Pullen and Leazar Literary Societies afford excellent opportunities for practice in declamation, debate, composition, and parliamentary law, as well as opportunities for social pleasure and recreation.

The Alumni Association meets each year on the Monday preceding Commencement Day, transacts its annual business, hears the Alumni oration, and attends the annual Alumni banquet. This association purposes raising funds to erect an Alumni building at the College.

REQUISITES FOR ADMISSION.

Each applicant for admission must be at least sixteen years of age, and must bring a certificate of good moral character from the school last attended.

To the Four-year Courses.—Applicants for admission to the Freshman Class of all four-year courses and to the two-year course in Veterinary Medicine for the session 1912-13 will be examined on the following subjects: Arithmetic (complete), Algebra (to involution), English Grammar and Composition, and American History. No student will be admitted to the Freshman Class whose examination papers are seriously faulty in spelling, grammar, punctuation, or division into paragraphs.

Beginning with the session of 1913-14, admission to the Freshman Class of all four-year courses will be by the unit system. A unit is defined as a subject pursued in schools of approved grade for five periods a week throughout the year, each period being at least 45 minutes in length. Each applicant selecting from the subjects named must on examination make eight units. The following units are required for all four-year courses:

SUBJECT.	UNITS.
Algebra	1½
English	2
Geometry	½
United States History	1
Total units in required subjects	5

In addition to the 5 units in required subjects, a total of three units must be offered from the following electives, the credit on any one subject not to exceed the value indicated:

SUBJECT.	UNITS.
Agriculture	1
Botany	½ or 1
Bookkeeping	½
Chemistry	½ or 1
Civics	½
Drawing	½
English History	1
Foreign Language	1
Latin	2
Manual Training	½
Physics	½ or 1
Physiology	½
Zoology	½ or 1

The 1½ units required in Algebra must cover the subject to quadratic equations.

The ½ unit required in Geometry must include the first three books of plane Geometry.

Of the 2 units required in English, 1 unit must be in grammar and composition and 1 unit in literature.

The ½ unit in drawing may be for either free-hand or mechanical drawing.

A full unit will be allowed for any one science only when the subject has been given with laboratory work.

Admission on Certificate.—The applicant is required to submit to the Dean of the College a certificate of the high-school or academy credits, properly certified to by the authorities of the institution in which the work was done.

To the Two-year Courses.—Applicants for admission to the two-year courses in Agriculture and in Mechanic Arts will be examined on Arithmetic complete, English Grammar and Composition, and American History.

To the One-year Course in Agriculture.—Applicants for admission to the One-year Course in Agriculture and to the Two-year Course in Textile Industry will be required to pass on Arithmetic through decimal fractions, on English Grammar and on United States History.

To the Winter Courses.—No entrance examination is required of candidates for admission to the winter courses. No one under eighteen years of age will be admitted to a winter course.

ENTRANCE EXAMINATIONS.

Entrance examinations will be held by the County Superintendents of Instruction in each courthouse in the State at 10 o'clock a. m. the second Thursday in July of each year. The date for 1912 is July 11. These examinations will save the expense of a trip to Raleigh in case the candidate should fail or in case there should not be room enough for him in the College. Entrance examinations will be held also at the College at 8:30 o'clock a. m. on the Wednesday preceding the opening day. The examinations begin with English at 8:30 a. m., in Room 21, Holladay Hall, followed by Mathematics at 10, and History at 2, in the same room. The date for 1912 is September 4.

ADMISSION WITHOUT EXAMINATION.

The following persons will be admitted without examination:

1. Applicants for admission to winter courses, if over eighteen years of age.

2. School teachers, holding teachers' certificates, if the holders are sufficiently familiar with Algebra.
3. Graduates of those high schools and academies whose certificates are accepted by the Faculty of this College.

ADVANCED CREDIT.

Students who have attended colleges of approved standing will be allowed credit for work done upon the presentation of proper certificates to the Dean, who, with the heads of the departments concerned, will determine their value.

SESSION.

The College session lasts nine months, and opens annually the first Thursday in September and closes the last Tuesday in May, with a vacation of about two weeks at Christmas.

EXPENSE.

The total average college expense of a Freshman student is $235.

The total average college expense of a Freshman student having a scholarship is $190.

These amounts include cost of board, tuition, lodging, fuel and lights, fees and deposits, books, uniform and cap, drawing instruments, and laundry. They do not include allowance for clothing, other than for uniform and cap, nor for spending money and contingencies.

Allowance for clothing, spending money, and contingencies should be kept within reasonable bounds. The allowances which parents make their sons for contingencies and spending money, it is suggested, should be kept small; for small allowances frequently take away temptation to unwise living.

DETAILED INFORMATION.

The largest payment is made in September. On entrance, a Freshman student will need $85 to meet all of his various payments for the first month. But of this amount, the payment $22.50 for tuition may be deferred, if desired, to the first of November. This will reduce the first, or entrance, payment to $62.50. This amount includes payment to the College of $44 (this may vary one or two dollars according to the course of instruction); deposit with the dealer for uniform and cap of $5. and $13.50 for the purchase of books and incidentals. In the case of day students, or students rooming and boarding out of College, tuition will be paid on entrance.

Board is $11 per month, payable in advance on the first day of each calendar month from September through to May. Board for less time than one month is charged for at the rate of 50 cents a day, or $3 per week. Refunds for board will be made on the basis of these charges.

Students withdrawing from College within two weeks from date of entrance will be refunded all money paid by them to the College Bursar except charges for board and lodging during the time they are in College. In special cases the right is reserved to modify or entirely to revoke this rule.

Refunds to students withdrawing later than two weeks from date of entrance will be made in proportion to the length of time they are in College. The right in special cases to modify or to revoke this rule is reserved.

EXPENSE BY MONTHS.

The following is a statement of the College expenses of a Freshman student by months, for Civil, Electrical, and Mechanical Engineering divisions:

SEPTEMBER: Room rent, fuel and lights, $15; incidental fee, $2; medical and hospital fee, $3; lecture fee, $1; library fee, $1; furniture fee, $1; physical culture fee, $1; military equipment deposit, $5; mechanical and physical laboratory fees, $3; board for September, $11; a total of $43. Tuition for one-half session, $22.50, may be paid at this time, which will make a total of $65.50. In addition, there is required by the merchant a deposit of $5 for uniform and cap when the measure of the student is taken; and about $10 to $15 is required to buy books, drawing instruments, and for incidentals. An Agricultural Freshman pays $1.50 more than the above. A Textile Freshman pays $1 less than the above. Chemical and Veterinary Freshmen pay $1 more than the above.

OCTOBER: Board, $11, and balance to merchant for uniform and cap, $15.

NOVEMBER: Board, $11; tuition, if it was not paid in September, $22.50.

DECEMBER: Board, $11.

JANUARY: Tuition, $22.50; lodging and fuel and lights, $15; medical and hospital fee, $3; furniture fee, $1; physical culture fee, $1; board, $11. A total of $53.50.

FEBRUARY: Board, $11.

MARCH: Board, $11.

NOTE.—The College Bursar is forbidden by the Trustees to give credit.

April: Board. $11.

May: Board. $11.

If the student has a scholarship, he does not pay tuition.

Students entering after September will pay on entrance all the items enumerated under "September," less a credit in part for tuition and room rent.

The amount of the September or entrance payment for students in other than Freshman classes varies slightly with the class, the course, and the division. This variation is caused by the additional collection of fees and deposits for laboratory work and for supplies. The amount of these fees and deposits is given in the table below, for all classes and courses. They vary widely in the Agricultural Course; here the minimum and maximum amounts are given.

	Sen.	Jun.	Soph.	Fresh.	2d Year S. C.	1st Year S. C.
Agr. students....	$ 0.00 to 14.00	$ 6.00 to 16.00	$ 8.50	Given on page 29.	$ 2.00 to 15.00	$ 2.00 to 11.00
C. E. "	1.00	1.00	4.00			
M. E. "	2.00	3.00	6.00		2.00	2.00
E. E. "	2.00	4.00	6.00			
Chem. "	14.00	16.00	7.00			
Tex. "	9.00	8.00	8.00		4.00	5.00

All unused deposits are refunded to the student at the end of the session or upon his withdrawal from College. If he has overdrawn his deposit, he is required to pay the amount of the overdraft.

ROOM FURNITURE.

The College rooms are supplied with necessary furniture. Each student, however, should bring with him two pairs of blankets, two pairs of sheets, one pillow and two cases, and two bedspreads for a single bed.

Overcoats may be brought from home or purchased in the city.

FREE TUITION.

Scholarships, one hundred and twenty in number, conferring free tuition, are given to needy young men of talent and character. As far as possible, these scholarships are distributed among the counties of the State. Appointments are made only by the President of the

College upon written recommendation of members of the Legislature. The scholarships are not intended for people who have property. Certificates of inability to pay must be made by the applicant and endorsed by the person recommending him.

SELF-HELP.

Some students who are alert and energetic frequently earn part of their expenses in College. Some of the agricultural students find work at odd hours on the farm, in the orchard, in the barn, in the dairy. Some students act as agents for laundries, for furnishing-houses, for pressing clubs. The College employs a few students for the dining-room and for other purposes. A student's ability to support himself will depend largely on his own power to find work and to hold it after he finds it. It must, however, be remembered that the duties of the classroom take most of a student's time, and his hours for remunerative work are therefore limited.

STUDENT LOAN FUND.

The Alumni Association of the College has established a small fund to be lent to needy students of talent and character. The loans are made at 6 per cent, and good security is required. Sufficient time for repayment is given to enable the student to earn the money himself. The amount lent to each student is limited. The purpose is to help young men who are willing to help themselves and who cannot find sufficient employment while in college to meet all their necessary expenses.

Contributions are solicited for this fund from students, alumni, and friends of education generally. The fund is administered by the College Bursar, under the direction of the President. At present the fund amounts to $4,210.

BOARD AND LODGING.

All students are expected to board in the College dining hall or in approved boarding-houses near the College, and to room in the College dormitories. An abundant supply of plain, nourishing food, with as large a variety as possible, is furnished absolutely at cost. The charge at present is $11 per month, payable in advance.

Rooms in the College dormitories are supplied with electric lights, steam heat, and all necessary furniture, except sheets, blankets, pillow-cases, pillows, bedspreads, and towels, which each student must furnish for himself. The charge for lodging is by the month, and there is no reduction in case of withdrawal.

DRILL.

In return for the Morrill Fund of the United States Government, the College is under contract to require its students to drill at least three times each week, and an Army officer is detailed to conduct the drills. No student will be excused from drill unless the College Physician, after examination, deems him unfit for military duty.

UNIFORM.

The College uniform must be worn by all students when they are on military duty. It must be bought at the College from the regular contractor. The uniform is of strong gray cloth and with proper care should last one or two years.

CARE OF THE SICK.

Every effort is made to protect the health of young men in the College. Regular inspections of the entire institution are made once a year, or oftener, by the State Board of Health. Similar inspections are made monthly by the College Physician.

Each student has a regular routine of daily life, including abundant physical exercise in the shops and on the drill grounds.

In case of sickness, a student is taken immediately to the College Infirmary, where he receives medical attention and careful nursing.

The College Physician visits the Infirmary daily at 3 o'clock p. m., and in cases of serious illness as frequently as may be required.

A trained nurse has charge of the Infirmary at all times.

VACCINATION.

By direction of the Trustees, no young man will be registered unless he has been successfully vaccinated. The College greatly prefers that all applicants for admission should be vaccinated at home, and that a certificate of successful vaccination within the past two years be brought from the family physician. In case this cannot be done, the College Physician will vaccinate applicants before they are registered at the College. A blank form to be filled by the home physician will be mailed on application. It will save a great deal of time and trouble, therefore, to be vaccinated before applying for registration. In this way applicants will avoid the inconvenience and discomfort resulting from vaccination while at College.

COURSES OF INSTRUCTION.

The College offers the following courses of instruction:

I. **Four-year Courses:**

1. **Agriculture** (including Agronomy, Soils and Drainage, Animal Husbandry and Dairying, Horticulture, Veterinary Science, Biology, Poultry Husbandry, and Agricultural Chemistry.
2. **Engineering** (including Civil Engineering, Mechanical Engineering, Electrical Engineering, and Chemistry).
3. **Textile Industry** or Cotton Manufacturing (including Carding, Spinning, Weaving, Designing, and Dyeing).

These courses offer a combination of practical and theoretical work, about half of the time being devoted to lectures and recitations and the other half to work in the shops, laboratories, drawing-rooms, greenhouses, dairies, fields, and mills. They are intended to furnish both technical and liberal education. The degree of Bachelor of Science is conferred upon a graduate of the four-year course in Agriculture, in Chemistry, or in Dyeing, and the degree of Bachelor of Engineering upon a graduate of either of the other four-year courses.

II. **Short Courses** of two years in Textile Industry, two years in Agriculture, one year in Agriculture, and of two years in Veterinary Science, and in the Mechanic Arts (including Carpentry, Woodturning, Blacksmithing, Machine-shop Work, Drawing), and a one-week course in Farm Drainage.

The short courses include nearly all the practical work of the four-year courses, with less theoretical instruction. They are intended for students who desire chiefly manual training. They do not lead to a degree.

III. **Winter Courses** in Agriculture and Dairying and in Textile Industry, beginning at the opening of College in January and lasting six weeks.

IV. **Normal Courses** for the training of teachers in industrial subjects.

V. **Graduate Courses**, extending over two years and leading to advanced degrees, are intended for students who have completed the four-year courses and who desire further instruction and training in special subjects.

VI. **May School for Teachers**, a two-weeks course designed for public school teachers who desire preparation in Nature Study and Agriculture.

AGRICULTURAL COURSES.

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a. The Four-year Course in Agriculture.
b. The Two-year Course in Agriculture.
c. The Two-year Course in Veterinary Medicine.
d. The One-year Course in Agriculture.
e. The Six-weeks Winter Course in Agriculture.
f. The May School for Teachers.

Aim and Scope.—The aim of the Agricultural Courses is to train young men in both the science and the practice of their vocation. It is believed that every young man preparing to farm needs a double education—one that is practical, to fit him for his profession; another that is cultural, to fit him to live.

In order to meet the necessities of all young men who desire instruction in Agriculture, the College offers five distinct courses:

a. The Four-year Course aims to give a training that is thoroughly practical as well as scientific in Agriculture and its various branches, such as Stock-raising, Dairying, and Horticulture. The strictly technical portion constitutes about one-third of the work. Of the remaining two-thirds of the course, more than one-half is prescribed in the sciences. This is done for the training and information they give, and to prepare for the technical work of the course. Because of this, and because the subject-matter and the methods of the technical portion lie so fully within the domain of science, the course is essentially scientific rather than literary. Yet the College is mindful of the fundamental character of such studies as Mathematics, English Literature, Physics, etc., and they are not neglected in this course. **Full description of the Four-year Course begins on page 43.**

b. The Two-year Course in Agriculture is offered to meet the necessities of young men who wish to prepare themselves in the art rather than in the science and art of agriculture. This course does not lead to graduation, but is designed to help young men better fit themselves by a year or two of practical work for their chosen sphere of industrial activity in the garden, orchard, on the farm, and in the production of animals and animal products. **The Two-year course is described on page 63.**

c. The Two-year Course in Veterinary Medicine has been established at this College as the result of a rapidly increasing demand for qualified veterinarians. The purpose of the course is to give a broad and thorough basic training in the fundamentals of veterinary medicine, along with abundance of practical work in the clinics, laboratories, judging and dissecting rooms.

The work of these first two years is correlated with that of the junior and senior years at a number of the better veterinary colleges, in which colleges subject credit may be obtained for work taken here. **For outline and description of course, see page 68.**

d. The One-year Course in Agriculture is designed to meet the needs of young men who are ambitious to excel in the vocation of farming, and who feel the need of better preparation for their life-work. The time which can be devoted to study is often limited; hence the topics in this course have been arranged in such a manner that the student is enabled to get the greatest amount of practical information in the time at his disposal.

Education and training pay on the farm as elsewhere. The young man who prepares himself for his life's work will make more rapid strides and will gain success much quicker than the one who does not.

The College has numerous calls for young men to manage farms and estates. It is able to fill only a limited number of them. Young men who have any talent along this line can fit themselves for this work by taking this course. **The One-year Course is described on page 74.**

e. The Six-weeks Winter Course in Agriculture is established to meet the needs of those who can spend only the winter at the College. The important and practical subjects of Agriculture and Horticulture and Stock-raising receive principal attention. **The Six-weeks Course is described on page 78.**

f. The May School is intended to meet the needs of teachers who wish to make themselves more proficient in Agriculture and Nature Study. **The May School Course is described on page 148.**

Methods of Instruction.—Instruction is by laboratory work, supplemented by text-books, lectures, and reference readings, which are assigned from standard volumes and periodicals.

The equipment for the technical work of the course is rapidly increasing. The Dairy Department is equipped with a modern creamery for pasteurizing, separating, creaming, and churning, and for investigation in dairy bacteriology.

The department makes free use of the fields, orchards, and gardens, in which the Agricultural Experiment Station conducts experiments in methods of culture, in effects of several practices on yield and on fertility, and in varieties of fruit, of vegetables, and of forage crops. The methods employed and the results obtained are freely used for instruction.

SCHOOL OF AGRICULTURE.

a. Four-year Course in Agriculture.

This course leads to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mathematics, 110, 111	5	5	5
English, 120	3	3	3
Botany, 30, 31	3	3	3
Agriculture, 1	3	--	--
Animal Husbandry, 40	--	3	3
Chemistry, 90	3	3	3
Drawing, 142	2	--	--
Physiology, 60	--	2	2
Military Drill, 150	3	3	2
Totals	22	22	21

Sophomore Year.

Dairying, 48	4	--	--
Physiology, 60	2	--	--
Poultry, 51	--	3	3
Plant Diseases, 32	3	--	--
Wood Shop, 140	--	2	2
Plant Propagation, 20	--	3	--
Vegetable Gardening, 21	--	1	4
Zoology, 80	2	2	--
Entomology, 81	--	--	2
Chemistry, 92	3	3	3
Physics, 100	2	2	2
English, 121	3	3	3
Tactics, 151	1	1	1
Military Drill, 150	3	3	2
Totals	23	23	22

AGRONOMY DIVISION.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment, 2	--	2	2
Farm Crops, 3	2	2	2
Soils, 10	3	3	3
Bacteriology, 34	2	2	2
Animal Husbandry, 41, 42, 43	3	3	3
Entomology, 81	2	--	--
Agricultural Chemistry, 92	2	2	2
English, 122, 123	3	3	3
Horticulture, 22, 23	4	4	4
Military Drill, 150	3	3	2
Totals	24	24	23

Senior Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Special Crops, 4	3	3	3
Farm Management, 5	3	--	--
Agronomy, 6	--	3	--
Fertilizers, 11	--	2	2
Drainage, 12	2	--	--
Plant Diseases, 33	2	2	2
Live-stock Management, 44	3	3	3
Poultry, 52	--	--	3
Economics, 125	1	1	1
Elective	8	8	8
Totals	22	22	22

HORTICULTURAL DIVISION.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Animal Husbandry, 41, 42, 43	3	3	3
Soils, 10	3	3	3
Entomology, 81	2	2	2
Farm Crops, 3	2	2	2
Farm Equipment, 2	--	2	2
Agricultural Chemistry, 92	2	2	2
Bacteriology, 34	2	2	2
English, 122, 123	3	3	3
Practical Pomology, 22	4	2	--
Plant Breeding, 23	--	2	4
Military Drill, 150	3	3	2
Totals	24	26	25

Senior Year.

Farm Management, 5	3	--	--
Special Crops, 4	3	3	3
Fertilizer, 11	--	2	2
Systematic Pomology, 24	3	--	--
Floriculture, 25	3	--	--
Landscape Gardening, 26	--	3	3
Horticulture (elective)	--	3	3
Plant Diseases, 33	2	2	2
Entomology, 82	2	2	2
Economics	1	1	1
Elective	5	6	6
Totals	22	23	22

ANIMAL HUSBANDRY DIVISION.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment, 2	--	2	2
Farm Crops, 3	2	2	2
Soils, 10	3	3	3
Bacteriology, 34	2	2	2
Animal Husbandry, 41, 42, 43	3	3	3
Veterinary Medicine, 61, a, b, c	4	4	4
Entomology, 81	2	--	--
Agricultural Chemistry, 92	2	2	2
English, 122, 123	3	3	3
Military Drill, 150	3	3	2
Totals	24	24	23

Senior Year.

Special Crops, 4	3	3	--
Farm Management, 5	3	--	--
Fertilizers, 11	--	2	2
Live-stock Management, 44	3	3	3
Advanced Breeding, 45, or Advanced Dairying, 49	3	--	--
Advanced Feeds, 46, or Dairy Bacteriology, 36	--	3	--
Market Classes and Grades of Meat, 47, or Dairy Manufacture, 50	--	--	3
Poultry, 52	--	--	3
Veterinary Medicine, 62	3	3	3
Economics, 125	1	1	1
Elective	6	7	7
Totals	22	22	22

VETERINARY DIVISION.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Crops, 3	2	2	2
Soils, 10	3	3	3
Bacteriology, 34	2	2	2
Animal Husbandry, 41, 42, 43	3	3	3
Anatomy, 64, and Clinics, 67	3	3	3
Histology, 65	3	3	3
Agricultural Chemistry, 92	2	2	2
English, 122, 123	3	3	3
Materia Medica, 66 (elective)	--	2	2
Military Drill, 150	3	3	2
Totals	24	26	25

Senior Year.

Special Crops, 4	3	3	--
Live-stock Management, 44, or Breeding, 45	3	3	3
Feeding, 46, or Grades and Classes of Meats, 47	3	3	3
Poultry, 52	--	--	3
Anatomy, 68, and Clinics, 73	3	3	3
Veterinary Physiology, 69	2	2	2
Pathology and Bacteriology, 70	3	3	3
Materia Medica and Pharmacy, 71	3	--	--
Physical Diagnosis, 72	--	3	3
Elective	2	2	2
Totals	22	22	22

NORMAL DIVISION.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Animal Husbandry, 41, 42, 43	3	3	3
Soils, 10	3	3	3
Entomology, 81	2	--	--
Farm Crops, 3	2	2	2
Farm Equipment, 2	--	2	2
Agricultural Chemistry, 92	2	2	2
Bacteriology, 34	2	2	2
English, 122, 123	3	3	3
Practical Pomology, 22	4	2	--
Plant Breeding, 23	--	2	4
Military Drill, 150	3	3	2
Totals	24	24	23

Senior Year.

Farm Management, 5	3	--	--
Special Crops, 4	3	3	--
Fertilizers, 11	--	2	2
Poultry, 52	--	--	3
Live-stock Management, 44	3	3	3
Plant Diseases, 33	2	2	2
Mathematics	5	5	5
Elective	6	7	7
Totals	22	22	22

Senior Electives.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
English, 124	2	2	2
Advanced Soils, 13	3	3	3
Bacteriology, 35	3	3	3
Advanced Chemistry, 94	3	3	3
Advanced Physiology, 69	2	2	2
Histology, 63	3	3	3
French, German, Spanish, 130, 131, 132	3	3	3
Economics, 125	1	1	1
Drill, 150	3	3	3

FOUR-YEAR COURSE IN AGRICULTURE.

EQUIPMENT.

In addition to Patterson Hall, with its classrooms, laboratories, dairy, stock-judging room and offices, the College possesses the following equipment for instruction in Agriculture:

The farm includes four hundred and eighty-five acres, with two hundred and sixty acres under cultivation; a two-story sixteen-stall horse and storage barn; a fifty-stall dairy barn; a large combination horse, implement, and storage barn; a large implement, fertilizer and grain barn; and a calf barn; silos with capacity for four hundred tons of silage; a No. 18 Ohio feed and ensilage cutter operated by an electric motor, and implements and machinery necessary for up-to-date farming.

The live stock consists of the necessary Percheron mares and mules, a Percheron stallion, a herd of dairy cattle, and pure-bred swine. Breeding stock is sold as a part of the farm products.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry-keeping in North Carolina; an incubator cellar with several makes of incubators; a brooder house heated by hot water, and several makes of indoor and outdoor brooders. The feed-room is equipped with steam engine, grist and bone mills. Ten or fifteen varieties of poultry are kept, and eggs and breeding fowls are sold to the public.

The horticultural equipment consists of about thirty acres in tree fruit, nuts, vineyard, berries, and vegetables, in appropriate assortment of classes and varieties for demonstration and instruction. These afford means for work in seed selection, bud studies, propagation, budding, grafting, transplanting, pruning, spraying, and variety study. The greenhouse affords means for starting vegetables and growing ornamental and exotic plants as well as for the illustration of interesting and instructive plant-life phenomena.

The dairy equipment is complete and thoroughly modern. The laboratory occupies about four thousand feet of floor space in Patterson Hall, and is equipped for instruction in farm dairying, retailing milk, creamery practice, cheese and butter making, milk testing and pasteurizing. The dairy equipment is modern and complete.

The North Carolina Experiment Station is a department of the College, and its close association with the School of Agriculture gives exceptional opportunities to the Agricultural students for instruction and observation covering experiments and research in agronomy, chemistry, horticulture, vegetable pathology, plant diseases, bacteriology, dairy and animal husbandry, poultry husbandry, veterinary science, and entomology.

AGRONOMY.

Subjects of Instruction.

1. **Agriculture.**—Introductory to Agriculture in its broader sense. The simpler properties of soils, tillage, fertilizers, conservation of fertility; crops of North Carolina, seed selection, rotation, etc., are briefly considered by lectures and practical demonstrations in the laboratory and in the fields. Three periods, first term. Required of Freshmen. Professor Newman.

2. **Farm Equipment.**—Lectures and recitations upon selecting, planning, and equipping farms; locating, planning, and erecting farm buildings; tools and miscellaneous appliances; farm power; fences, gates, and bridges; farm roads. Two periods, second and third terms. Required of Juniors. Professor Newman.

3. **Farm Crops.**—Recitations and lectures upon the history, production, uses, and marketing of farm crops. Exercises in the field and laboratory, covering tillage, seed selection, storage, and rotation. The crops grown upon the College farm are used for instruction and demonstration, supplementing laboratory, lecture, and text-book instruction. Two periods, first, second, and third terms. Required of Juniors. Mr. Hodson.

4. **Special Crops.**—This course embraces advanced work in farm crops and is a continuation of the Junior work, but is more specialized and technical. Corn, cotton, small grain, hay and forage crops and the principal legumes are studied in detail, as well as such other crops as time will permit. Rotation and the conservation and development of fertility in connection with their use on the farm or the sale of the various crops. The practical application of the principles of breeding is applied to cotton, corn, and cowpeas. Each student is required to present a monograph on some crop or some subject of close relationship to important crops of the State. Three periods, first, second, and third terms. Required of Seniors. Professor Newman.

5. **Farm Management.**—Types of farming and their relation to soil, climate, labor, transportation, population, capital, and land values; operating expenses; systems of land tenure; farm organization; size of farms; location and arrangement of buildings, roadways, fences,

water supply, orchard, garden, etc.; factors governing nature and amount of equipment; financial accounts; farm records; diversification; rotation from a business point of view; cropping systems; relationship of animal and plant production; maintenance of fertility; standard of living; schools; churches. Three periods, first term. Required of Seniors. Professor NEWMAN.

6. Agronomy.—This course is for students specializing in Agronomy. Each student will select a subject or a group of allied subjects for investigation, be given references, and required to submit the results of his studies in bulletin form. Three periods, second term. Required of Seniors in Agronomy Division. Professor NEWMAN.

SOILS.

Equipment.

The Soils Department has a large new laboratory in Patterson Hall furnished with solid oak desks and lockers so arranged as to accommodate a large number of students in general soils work and to allow individual locker space with plenty of working room for each student. These desks and lockers, with other tables and soil chests, were designed and made to order for this laboratory, and hence are arranged to give the greatest convenience and the most complete use of the room that is possible.

The apparatus is all of the latest and most approved models, giving greater utility and accuracy, combined with simplicity, than would be possible with any other.

In addition to the laboratory facilities, the department makes use of the College farm for its practical work in drainage, terracing, fertilization, cultivation, and study of soil types. A series of plats for soil demonstration work has been arranged which is expected to illustrate many features of practical importance in the maintenance of soil fertility.

Subjects of Instruction.

10. Soils.—Attention is given to the forces that decompose and disintegrate rock and to the influence of these forces and of the various kinds of rock on the resulting soil. The physical characters, such as water-holding capacity, capillarity, drainage, effect of mulches, temperature and weight, and the modification of these characters by tillage, cropping, and all operations of practical soil management, are discussed and exemplified in the classroom, laboratory, and field. Some attention is given to the classification of soils in the United

States, and especially in North Carolina. The physical, chemical, and bacteriological soil conditions are discussed in relation to each other and to their effects on soil fertility. Systems of maintaining the permanent productiveness of soils are studied. Three periods throughout the year. Required of Juniors. Prerequisite, Chemistry 90 and 92, and Physics 100. Associate Professor SHERWIN.

11. Fertilizers.—Sources, composition, availability, and value of various commercial and farm fertilizers. Comparative value of the elements of plant food in different carriers as shown by their productive capacity. Fertilization of all the principal crops of the State and of any special crops in which the class is interested will be discussed, considering amount, method, and time of application, as well as the most economical formula to use. Two periods, second and third terms. Required of Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

12. Farm Drainage.—This includes both principles and practice of drainage. The student becomes familiar with the use of various drainage instruments and implements, as the course involves considerable field work in laying out systems of under-drains. Different methods of leveling and determining grade are discussed and practiced.

Determination of size of tile needed, depth and method of laying, influence of depth of tile and distance apart of drains on withdrawal of water from the soil, and all of these as influenced by texture and character of the soil, are considered. Drainage by means of open ditches and surface drainage by means of terraces will also be given attention. Two periods a week, first term. Required of Seniors in Agronomy. Elective for all other Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

13. Advanced Soils.—In this course the student will be guided in the study of any line of Soils work he may choose, either along practical or scientific lines. Laboratory work will be given. Considerable reference will be made to Experiment Station literature with the aim of acquainting the student with the literature on the subject and with the methods of investigation used. Three periods a week throughout the year. Elective for Seniors. Prerequisite, Soils 10. Associate Professor SHERWIN.

HORTICULTURE.

Equipment.

The Department of Horticulture is provided with facilities for instruction which are singularly efficient in many respects; and additional ones which are to be expected in the near future will equip it with unexcelled means of teaching Horticulture in all its branches. At present, the offices, classrooms, laboratory, and storage spaces of the department are located in Patterson Hall, and additional working space is available in connection with the greenhouses under its control. The department also has the management of about twenty-five acres of land devoted to fruits and vegetables of all kinds, and of the college campus, covering from forty-five to fifty acres, which is in process of development in accordance with artistic and scientific principles of landscape design.

The laboratories are used for practice work in all methods of propagation of plants; the study of buds and twigs of fruit and ornamental plants; the study of vegetables, fruits, and nuts; the design of greenhouse structures, landscape plans and specifications; and the sorting, grading, and packing of horticultural products. A supply of necessary apparatus is on hand, and consists of knives; pruning shears and saws; grafting and budding tools; spray pumps, wheel hoes, and seed drills; fruit and vegetable packing tables; and market packages of all standard kinds, for use both indoors and out in the field. Practice work is an essential adjunct of every course. Student work under competent supervision is employed in all parts of the grounds.

Exceptional facilities for instruction in Pomology and Plant Breeding are possessed by the department in the management of the Horticultural Grounds, which contain from fifteen to twenty acres of land planted with the best varieties of all fruits which will grow in North Carolina. In these grounds there is an orchard each of apples, pears, peaches, pecans, and figs; a vineyard each of "bunch" and muscadine grapes; and smaller plantings of plums, persimmons, quinces, cherries, raspberries, blackberries, dewberries, strawberries, and other small fruits. The remaining and intermediate space is used for growing vegetables; the maintenance of a nursery for fruit and ornamental plants; and the ornamental planting about the dwelling situated near the middle front of the grounds, which, as a whole, are designed to serve as a model of a small fruit farm economically and tastefully arranged.

A separate plat of land covering about five acres is used entirely for vegetable gardening purposes. Here students are assigned plats of equal size, and are required to plan, plant, cultivate, and harvest vegetable crops—to apply the knowledge acquired in the classroom. In addition to the methods common to the trucking industry and the home garden, the growing of a large quantity of vegetables for the College Dining Hall furnishes an excellent opportunity for instruction in market-gardening practices.

Subjects of Instruction.

20. Plant Propagation.—A course in the study of the principles involved, and the methods employed, in the multiplication of plants. Seedage, separation and division, layerage, cuttage, and graftage are considered in turn. The student is given an opportunity to acquire skill in propagation by practicing the most common and approved methods used with vegetable, fruit, and ornamental plants. Three periods, second term: recitation, two hours; practice, two hours per week. Required of Sophomores. Mr. Crider.

21. Vegetable Gardening.—A course dealing with the principles and practices of the Home, Truck, and Market Gardening areas. Special attention is given to the Home Garden and Trucking industry in North Carolina. The work consists in the selection of sites and soils; and treats of manures and fertilizers, sowing of seeds, handling of plants, transplanting and planting, construction and management of hotbeds and cold frames, and the culture, harvesting, storing, and marketing of all important vegetables. One period, second term; practice, two hours. Four periods, third term; recitation, three hours; practice two hours per week. Required of Sophomores. Prerequisites: Horticulture 20. Mr. Crider.

22. Practical Pomology.—A course treating of the location of orchards; the selection of sites and soils; the choice of varieties; the preparation of the land; and the planting, cultivation, fertilizing, pruning, harvesting, and marketing of North Carolina fruits. Practice consists in the inspection and examination of sites and soils; the making of orchard plans; laying out the orchard; handling and planting trees; training and pruning; and the exercise of modern methods of picking, grading, packing, and marketing fruits. Four periods, first term: recitation, three hours; practice, two hours. Two periods, second term: recitation, one hour; practice, two hours per week. Required of Juniors in Horticultural and Normal Divisions. Prerequisite: Horticulture 20. Professor Pillsbury.

23. Plant Breeding.—A course in the study of the fundamental laws of plant breeding, and the application of principles to the practice of the most approved methods of selection, hybridization, origination and improvement of varieties of plants. Two periods, second term: recitation, two hours. Four periods, third term: recitation, two hours, practice four hours per week. Required of Juniors in Agronomy and Horticultural divisions. Prerequisites: Horticulture 20. Professor PILLSBURY.

24. Systematic Pomology.—A course which deals with the origin, evolution, and classification of varieties of fruits. Practice work consists in describing, identifying, classifying, and judging varieties of apples, pears, peaches, plums, grapes, and other fruits in season. Three periods, first term: recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisite: Horticulture 22 and 23.

25. Floriculture.—A course which treats of the principles and practice of growing plants under glass. Practice consists in designing greenhouse structures, and the handling, culture, harvesting, and marketing of the principal greenhouse crops. Three periods, first term: recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisite: Horticulture 20. Professor PILLSBURY.

26. Landscape Gardening.—A course in the study of the principles of the arts of design and their application to the design of landscapes. The principal styles of composition are considered and compared as to history, development, and adaptation. Practice consists in a study of landscape materials, and in mapping, designing plans and specifications, and in the execution of important parts of the practical work of improving grounds, such as grading, laying out drives and walks, and areas for planting, making lawns, and planting ornamental plants. Three periods, second and third terms: recitation two hours, practice two hours per week. Required of Seniors in Horticultural Division. Prerequisites: Horticulture 25. Professor PILLSBURY.

27. Horticulture, Elective.—A course designed to give the student an opportunity to elect and to pursue the study of some special line of horticultural investigation. Three periods, second and third terms: hours to be arranged. Open to Seniors in Horticulture only. Professor PILLSBURY.

BOTANY AND VEGETABLE PATHOLOGY.

Equipment.

Three commodious laboratories and a large recitation and lecture room are devoted to Botany, Bacteriology, and Vegetable Pathology. A research-room is provided for the use of advanced students. There are also offices for the professor and instructors, and a storeroom, a dark-room, and an incubator-room. All rooms are supplied with electricity, gas, and hot and cold water, and the bacteriological laboratory is, in addition, provided with steam under 80 pounds pressure for purposes of sterilizing. The laboratories are supplied with wall-cases, shelves, herbarium cases, specimen boxes, sterilizers, incubators, microscopes, microtomes, a liberal supply of glassware, and such small utensils as are needed in the prosecution of the work. The incubator-room is fire-proof, and is provided with a Weisnegg regulator capable of keeping the temperature of the room practically invariable. The excellent herbarium has been mounted, and is now accessible for class use. There is an extensive collection of seeds, both of weeds and cultivated plants, and the most important plant diseases are represented by herbarium and alcoholic specimens. The greenhouse is of great utility as a source of material, for seed-testing and for conducting experiments in plant physiology and pathology.

30. **Elementary Botany.**—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods, first and second terms. Required of Freshmen. Professor FULTON and Mr. ROSENKRANS.

31. **Systematic Botany.**—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Freshmen. Professor FULTON and Mr. ROSENKRANS.

32. **Plant Diseases.**—Lectures and laboratory study of the principal types of plant diseases produced by bacteria, fungi, or physiological

derangement, with specific consideration of the methods of treatment. This course emphasizes the principles of plant disease, and places the student in a position to employ prophylactic and remedial methods rationally. Three periods, first term. Required of Sophomores. Professor FULTON.

33. Plant Diseases (Advanced).—Methods of culture and investigation of plant diseases. This course is intended to prepare the student for original investigation in plant diseases. Two periods. For Seniors. Professor FULTON.

34. Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation and disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors. Professor FULTON and Mr. NORTON.

35. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in this subject. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, or in bacteriology of manure, water, soil, or air. The course is flexible, and will be made to fit the requirements of those students electing it. Three periods. For Seniors. Professor FULTON and Mr. NORTON.

36. Dairy Bacteriology.—Lecture and text-book course covering the more important facts in the relation of bacteria to dairying. The laboratory course consists in demonstrating and supplementing the lecture course. Practice is given in pasteurizing milk and cream for market, and in making and using starters in butter and cheese-making. Three periods, second term. For Seniors. Mr. NORTON.

ANIMAL HUSBANDRY.

Equipment.

A new Animal Husbandry building will be ready for occupancy during the summer of 1912. This building has been constructed at a cost of twenty-five thousand dollars and is up to date in every way. The department will have classrooms, offices, record-room, and stock-judging room, furnishing excellent facilities in this respect for students in Animal Husbandry.

The live-stock equipment has been added to materially during the past year. A fine registered Percheron stallion and three high-grade mares have been purchased for horse work. These are all used for farm work and breeding purposes as well as for class work. The dairy herd now consists of seventy-five head, of which about forty are cows in milk. Three leading breeds are represented, consisting of twelve high-grade Holstein cows and a registered bull, six pure-bred Ayrshire cows and a bull, twelve pure-bred Jerseys and a bull, the remainder being grade Jerseys and Guernseys. This gives splendid material for class work in the study of the dairy breeds.

Two Shorthorn, two Aberdeen Angus, and two Hereford steers are kept as material to be used in teaching methods of judging beef animals and for study of the leading beef breeds.

A herd of pure-bred swine has been established, consisting of the following breeds: Berkshire, Duroc Jersey, and Chester White. Good individuals have been selected and enough animals will be maintained to give the student a splendid opportunity for swine work.

The product of the dairy is sold as milk, butter, and cream to the College Dining Hall and to city customers.

40. Breeds of Live Stock.—A study of the origin, history, characteristics, adaptability, and popularity of the breeds of live stock. Every opportunity will be taken advantage of to teach the student the merits of the various breeds, and, when possible, classes of the breeds will be judged. Three periods per week, second and third terms. Required of Freshmen. Professor McNutt.

41. Animal Breeding.—A study of the fundamental laws and principles underlying the science of breeding, and the application of these laws in breeding the different species of domestic animals. Three periods per week, third term. Required of Juniors. Professor McNutt.

42. Stock Feeding.—A study of the composition of feeds and the food requirements of the domestic animals. The student will be required to become familiar with the fundamental principles so that he can compound suitable rations for the different classes of live stock. Especial emphasis will be laid upon practical problems in feeding. Three periods per week, second term. Required of Juniors. Text-book, Henry's *Feeds and Feeding*. Professor McNutt.

43. Live-stock Judging.—A study of the score-card and its use. A comparison of the score-cards for the various breeds, and practical scoring. Methods and rules in judging the various classes of live stock. In practical judging the student will be required to give oral or written reasons to sustain his placing of the animals. Three periods per week, first term. Required of Juniors. Professor McNutt.

44. Live-stock Management.—A study of the rules and regulations governing the importation of live stock into the United States, and the shipment of same in the United States. The feeding, care, and management of breeding and work stock, as well as fattening stock. Lecture course. Three hours per week throughout the year. Required of Seniors. Professor McNutt.

45. Advanced Animal Breeding.—A study of the Flock, Herd, and Stud books, and the rules governing registration as laid down by the different breed associations. Pedigree work will be included to give the student a clear idea of the leading families and prominent individuals. Three periods per week, first term. Required of Seniors. Professor McNutt.

46. Advanced Stock Feeding.—Continuation of Course 42, with especial emphasis laid upon practical feeding. The experimental work on feeding that has been done by the various experiment stations will be reviewed to give the student a clear conception of the importance and value of such work. Three periods each week, second term. Required of Seniors. Professor McNutt.

47. Market Classes and Grades of Meat.—A study of the market classes and grades of beef cattle, sheep, and swine; also slaughtering, marketing, and meat cutting. The relative value of the cuts from the various parts of the carcass will be given due consideration. Three periods each week, third term. Required of Seniors. Professor McNutt.

DAIRYING.

Dairy Equipment.—The dairy laboratory occupies about four thousand square feet of floor space in the basement of the new Agricultural Building, besides the locker-rooms and the toilet and bath rooms on the same floor and the dairy lecture-room on the second floor used by the dairy students.

The main dairy laboratory is thirty-six by fifty-seven feet, and is fitted throughout with modern equipment suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for the farm dairying consists, in the main, of De Laval, Sharples, Empire, National, United States, and Simplex hand separators, swing and barrel hand churns of different sizes; cream vats, hand and power butter-workers, aërators and coolers, milk-testers, and other articles useful in doing farm dairy work.

Milk-testing, which plays such an important part in all phases of dairy work, receives a great deal of attention. Several sizes of hand machines and a twenty-four bottle power tester are used in this work, together with all equipment necessary for testing milk, cream, butter, cheese, skim-milk, whey, and the lactometer is also used.

The equipment for giving instruction in commercial dairying consists of milk pump, receiving vat, tempering vat, turbine separator, continuous pasteurizer, combined churn and butter-worker, bottling outfit, and bottle-washing and sterilizing outfit.

Subjects of Instruction.

48. Dairying.—Text-book and lecture course covering the fundamental principles of modern dairying. The laboratory work consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction, care, and operation of the leading makes of cream separators. Proficiency is required of the student in testing and standardizing milk and cream, and in cream-ripening, churning, working, packing, and scoring butter. Four periods each week, first term. Required of Sophomores. Mr. SANBORN.

49. Advanced Dairying.—A study of the practical problems in dairy management. Dairy barn construction and arrangement of building and lots. The different phases of dairying will be studied from an economic standpoint. Three periods, first term. Professor McNUTT.

50. Advanced Dairying.—A study of the production of sanitary and certified milk. Dairy inspection with practice in scoring dairies. Milk inspection for adulterants and preservatives and butter scoring. Three periods a week, third term. Professor McNUTT.

POULTRY HUSBANDRY.

The poultry plant has thirty breeding pens with necessary yards, the houses being of several different types best suited to poultry keeping in North Carolina; an incubator cellar with several different makes of incubators; and a brooder house, which is heated by hot water. Both indoor and outdoor brooders of several different makes are used.

There is also a feed-room equipped with steam engine, and with grist and bone mills.

The following varieties of poultry are kept: Barred, Buff, and White Plymouth Rock; White and Columbian Wyandotte; single-comb Rhode Island Red; White and Brown Leghorn; Buff and White Orpington, and Black Minorca.

51. Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. For Sophomores. Assistant Professor JEFFREY, Mr. TAYLOR.

52. Poultry Husbandry.—Theory and practice of judging fowls by score-card and comparison; comparisons of different systems of poultry keeping; artificial incubation and brooding. Three periods, third term. For Seniors. Assistant Professor JEFFREY, and Mr. TAYLOR.

VETERINARY SCIENCE.

(Anatomy, Physiology, and Veterinary Medicine.)

For Course in Veterinary Medicine, see page 68.

Equipment.

For instruction in the above subjects, the department is provided with offices, lecture-rooms, laboratories, pharmacy-room (for drugs and surgical instruments), and dissecting-room.

The offices contain the usual office fixtures, besides a library of most of the standard works on veterinary medicine in English.

For use in classroom and laboratory, the department is supplied with mounted skeletons of man, of horse, and of cow; also numerous specimens of tumors, tuberculous organs, bony lesions of spavins, splints, ring bones, and side bones. Besides the collection illustrating diseased tissues, the department has a large collection of parasites which infest domestic animals.

The laboratories are provided with wall cases, work tables and desks, washing sinks, hot and cold water, gas burners, and electric lights. The laboratory for special work has microtome (for cutting sections of tissues for study with microscope), glass slides, stains, and the various materials required for making temporary and permanent mounts of healthy and diseased tissues. The larger laboratory is supplied with the necessary equipment for conducting exercises in physiology.

In the pharmacy-room are samples of a large number of drugs used in comparative medicine, and a more or less complete set of surgical instruments, including an operating table for small animals, and casting harness and slings for larger animals.

60. Animal Physiology.—This subject during the Freshman year will include a study of the structures of the body and of the composition of foods. In the Sophomore year it will include a comparative study of the bodily functions of man and of the domestic animals. The subject will be covered by lectures and recitations, demonstrations, and laboratory exercises. Two periods, second and third terms. Required of Freshmen. Two periods, first term. Required of Sophomores. Professor ROBERTS and Doctor SIMMS.

61. Veterinary Medicine—(a) Veterinary Anatomy.—Text-book, supplemented by lectures and illustrated by charts, models, skeletons, sketches, and dissections. Anatomy being a fundamental subject in any system of medicine, and essential to a thorough knowledge of live stock, the first term will be largely devoted to this study, special attention being given to the organs of digestion and locomotion, and such other parts as are of interest to the stock farmer. One period each week will be devoted to a clinic. Four periods, first term. Required of Juniors in Animal Husbandry Division. Professor ROBERTS and Doctor KOONCE.

(b) Veterinary Medicine.—Lectures on the actions, uses, and doses of the most common veterinary medicines, and the nature and cause of disease, with special reference to its prevention. One period each week will be devoted to a clinic. Four periods, second term. Required of Juniors in Animal Husbandry Division. Doctor SIMMS and Doctor KOONCE.

(c) Veterinary Practice.—Lectures on the most common diseases and injuries of domestic animals will be given. These lectures will be supplemented weekly by clinics, where drugs will be administered to sick animals and surgical operations performed. Four periods, third term. Required of Juniors in Animal Husbandry Division. Doctor SIMMS and Doctor KOONCE.

62. Veterinary Medicine.—Advanced course in veterinary medicine and surgery. A continuation of the subject as outlined for Juniors, special attention being given to infectious diseases communicable to man, and their significance in meat and milk inspection, and also to diseases attendant upon breeding animals. Three periods. Required of Seniors in Animal Husbandry Division. Professor ROBERTS and Doctor KOONCE.

63. Histology.—A microscopical study of the tissues of the body, treating of the cell as the unit of structure, and of its functions; also of tissues, their classification, and their relation to the structure of organs. From dissections, clinics, and proximity to slaughterhouses, abundance of histological material of various animals is received. Three periods. Required of Juniors in the Veterinary Division. Elective for Seniors. Professor ROBERTS and Doctor SIMMS.

For agricultural students intending to pursue a veterinary course, opportunity will be given during their Junior and Senior years to elect subjects required in the Freshman and Sophomore years of such a course.

64. Veterinary Anatomy.—This subject will deal with the study of the skeleton, including bones and joints, and of muscles and digestive organs. A complete dissection of the muscles of the horse will be made. Three periods. Required of Juniors in Veterinary Division. Doctor SIMMS.

65. Materia Medica.—A study of the drugs used in comparative medicine will consist of their classification, composition, physiological actions, and doses. Two periods, second and third terms. Required of Juniors in the Veterinary Division. Professor ROBERTS.

66. Clinics.—An essential part of the training of students in comparative medicine consists in seeing for himself animals suffering with the various diseases discussed in classroom. To this end abundant clinic material is available in the veterinary hospitals in Raleigh. Three periods. Required of Juniors in the Veterinary Division. Doctors KOONCE, ROBERTS, and SIMMS.

67. Veterinary Anatomy.—A continuation of course 64. A study of the respiratory, circulatory, and nervous systems will be made. with complete dissection of each in the horse. Three periods. Required of Seniors in the Veterinary Division. Professor ROBERTS.

68. Veterinary Physiology.—A comparative study of the bodily functions of the various domestic animals is made, with special reference to digestion. respiration. circulation. and secretion. Two periods. Required of Seniors in the Veterinary Division. Elective in all other Senior courses. Doctor SIMMS.

69. Pathology and Bacteriology.—A large number of specimens of diseased tissue already present in the museum and opportunity for collecting others from clinics and abattoirs insure plenty of material to demonstrate the various macroscopical and microscopical changes in organs and tissues due to disease. Especial attention is paid to the isolation and study of the pathogenic bacteria from the various organs of diseased animals. Three periods. Required of Seniors in the Veterinary Division. Doctor SIMMS.

70. Materia Medica and Pharmacy.—Course 66 will be continued along with prescription-writing and laboratory work in the preparation, compounding, and dispensing of medicines. Three periods, first term. Required of Seniors in Veterinary Division. Doctor SIMMS.

71. Clinical Diagnosis.—This subject is taught for the purpose of studying the methods for the examination of animals to detect and diagnose the various diseases affecting them. Three periods, second and third terms. Required of Seniors in Veterinary Division. Professor ROBERTS.

72. Clinics.—These will be given, as in the year previous, and will give the student opportunity of putting into practice the information he has gained from study of clinical diagnosis. In connection with the clinics autopsies are frequently held, giving the students excellent opportunities to observe changes in the body structures resulting from disease. Three periods. Required of Seniors in Veterinary Division. Doctors KOONCE, ROBERTS, and SIMMS.

ZOOLOGY.

80. Zoology.—An elementary study of all forms of animal life—regarding their general structure and classification, with particular reference to type examples of the principal groups of some economic importance—is given by text-book, laboratory work, and supplementary lectures. The first term's work is devoted to invertebrates, but with only a brief study of the true insects. The second term covers vertebrate animals. This course is planned to give the student a general knowledge of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Required of Sophomores. Associate Professor METCALF.

ENTOMOLOGY.

81. Economic Entomology.—Elements of insect structure and classification. Injurious insects and remedies: (*a*) of orchards; (*b*) of small fruits: (*c*) of truck and garden crops; (*d*) of cotton, corn, tobacco, grains, and grasses; (*e*) of forest, shade, and ornamental plants; (*f*) of barn, mill, and household. Lectures and demonstrations. Two periods, third term, required of Sophomores; and two periods, first term, required of Juniors. Associate Professor METCALF.

82. Systematic Entomology.—Systematic study of orders and families of insects, with special reference to structure, classification, life-history, and habits. Lecture and laboratory practice. Two periods, three terms. For Seniors. Required in Horticultural Division, elective in other divisions. Associate Professor METCALF.

CHEMISTRY.

90. Inorganic Chemistry.—Newell's *Inorganic Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Laboratory work accompanies the classroom work. Three periods. Required of Freshmen. Professors Withers and Mr. Sherwood.

92. Analytical Chemistry.—W. A. Noyes' *Qualitative Analysis.* After the student has learned to separate and identify elements in unknowns, special attention is given to tests of special interest to agricultural students. Three periods. Required of Sophomores. Doctor Williams.

93. Chemistry (Elective).—During the Senior year the student may elect some work in the Chemistry Department from the following subjects: Organic Chemistry, Physiological Chemistry, Qualitative Analysis, Quantitative Analysis. These subjects are described more in detail under the courses in Chemistry beginning with No. 300.

94. Organic Chemistry.—Lectures and laboratory work. Remsen's *Organic Chemistry.* Two periods. Required of Juniors. Doctor Ray.

PHYSICS.

100. Elementary Physics.—In this course special stress is laid upon the subjects of mechanics, liquids, gases, and heat. It includes the study of fundamental units, British and Metric standard measures, definitions of force, work and power, laws of motions, principles of machines, mechanics of fluids and gases, heat, and a brief introduction to the study of sound and light. For description of the Physical equipment, see page 105. Two periods. Required of Sophomores. Mr. Latané.

MATHEMATICS.

110. Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite for first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent on the work of the first term. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

111. Plane Geometry.—Wentworth's *Plane and Solid Geometry.* A complete course in plane geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

ENGLISH.

120. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

121. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

122. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

123. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Three periods, third term. Required of Juniors. Professor HARRISON.

124. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Two periods. Elective for Seniors. Professor HARRISON.

125. Economics.—This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Open to Seniors. Doctor SUMMEY.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences, without idiomatic expressions or difficult constructions, to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions, without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, by frequent repetitions, and by a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deducted from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language, and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Students may take any one or all of the modern languages during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work.

130. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; and a scientific reader. Three periods. Elective for Juniors and Seniors. Doctor RUDY.

131. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Française;* selected short stories from French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor Rudy.

132. Spanish.—Worman's *Modern Languages*, first and second Spanish books; *Introduccion a la lengua Castellana*, by Marion y Des Garrenes; a Spanish Grammar to be selected; Fontaine's *Flores de Espana*, and other short stories from Spanish literature; *Modelos para Cartas.* Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor Rudy.

SHOP AND DRAWING.

140. Wood Shop.—The use and care of ordinary woodworking and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. Required of Sophomores, second term, two periods per week. Mr. Clay.*

142. Drawing.—Elementary drawing, elementary projection, freehand sketching and lettering. Geometrical problems. Freehand drawing. Two periods, first term. Required of Freshmen. Mr. Coburn.

MILITARY SCIENCE.

150. Drill.—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier, squad, company, and battalion; ceremonies including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Captain Peace and Cadet Officers of the Battalion.

151. Tactics.—Theoretical instructions in Infantry Drill Regulations, Field-service Regulations, Manual for Guard Duty, and Small Arms Firing Manual. One hour each week. Required of Sophomores. Captain Peace.

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*For description of the shop equipment see page 94.

SHORT COURSES IN AGRICULTURE.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following short courses are offered. None of these courses, of course, lead to graduation, and they are not, in any sense, intended as preparatory courses to the regular four-year classes. They are designed simply to help young men better fit themselves, by a year or two of practical work under competent and interested supervision, for their chosen spheres of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take these shorter courses will be carefully drilled in the handicraft and mechanism of their art and in the application of elementary science to the farm, dairy, garden, and orchard.

b. TWO-YEAR COURSE IN AGRICULTURE.

This course offers, in addition to the purely agricultural branches, introductory and cultural subjects, and thus enables the student to secure not only all the technical and practical work of the One-year Course, but Physiography, Physics, English, and Mathematics, in addition, and all the better prepares young men to become farmers, farm managers, and teachers of agriculture and allied branches in the public schools. A description of the equipment will be found on page 43.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	2	2	2
Soils	--	2	2
Physiography	2	--	--
Principles of Plant Culture	--	--	2
Physics	2	2	2
Forge	2	2	--
Woodwork	2	2	2
Mathematics	5	5	5
English	3	3	3
Drill	3	3	3
Totals	21	21	21

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	2	3
Soils and Fertilizers	3	3	--
Animal Husbandry	3	3	3
Dairying	--	--	4
Veterinary Science	3	--	--
Poultry Husbandry	--	3	3
Fruit Culture	3	1	--
Vegetable Gardening	--	--	3
Plant Life	2	--	--
Diseases of Plants	--	3	--
Entomology	--	2	2
English	3	3	3
Drill	3	3	2
Totals	23	23	23

Agriculture (Two-year Course).—*First Year:* A broad elementary introduction to the study of Agriculture, including the more important field crops of the State. The history, classification, adaptation, culture, harvesting, marketing, and uses of corn and small grain. Two hours for three terms. Professor NEWMAN and Mr. HODSON.

Second Year: Cotton, legumes, hay and forage plants, seeds and seed selection; farm equipment, farm management. Three hours first term, two hours second term, and three hours third term. Professor NEWMAN and Mr. HODSON.

Physiography.—A study of the natural agencies affecting the earth's surface: soil, water, air, and temperature, and their effect upon plants and animals. Two hours first term. Required of first-year students. Professor NEWMAN.

Soils.—*First Year:* An elementary study of soils; different types and classes in relation to earliness, warmth, water-holding capacity, drainage, weight, and fertilization. An elementary study of plant food in the soil, including humus and its effect on crop production. The proper use of plows and cultivators and their influence on the production of better crops. Two periods a week, second and third terms. Associate Professor SHERWIN.

Second Year: This will include a study of the soils of the State; their formation and classification into agricultural types; their physical properties; relation to moisture and air supply; best methods of conserving and regulating the soil moisture; principles and practice of drainage. The effect of different soil and crop treatments, such as rotation, cultivation, and fertilization, will be studied. Considerable attention will be given to humus, farm manures, and green manures, and to the use and home-mixing of fertilizers, with special reference to the time and methods of using and the best mixtures for the various crops on different types of soil. Three periods, first and second terms. Associate Professor SHERWIN.

Principles of Plant Culture.—*First Year:* A course in which the functions of the various parts of plants; the activities engendered by heat, cold, moisture, and light, in seedage and other methods of propagation; the effect of soil and climate, and the principles of plant propagation, training, and pruning, are considered. Practice work consists in laboratory exercises demonstrating the facts studied. Two periods, third term.

Fruit Culture.—*Second Year:* This course treats of fruit growing as applied to the different sections of the State and the possibilities embodied in its further development. A text-book on the general subject of fruit culture is supplemented by lectures on the leading fruits, dealing with the kind of soil for fruits and its preparation, laying out the orchard, varieties, methods of propagation, planting, cultivation, fertilizing, pruning, harvesting, and marketing.

Practical exercises are given in laboratory, orchards, and vineyards, which include budding, grafting, top-grafting; making of cuttings; pruning of fruit and ornamental trees; fruit bud studies; planting and transplanting; identification of varieties; packing; and handling of nursery stock. Three periods first term, one period second term. Mr. CRIDER.

Vegetable Gardening.—*Second Year:* This course treats of the trucking industry of the State and the growing of vegetables for home use. A text-book is used, supplemented by lectures on the growing, handling, and marketing of the leading vegetables.

Practical exercises are given in the laboratory and field which include germinative tests of seeds; seed sowing; methods of transplanting and culture; manipulation of garden tools; construction and management of hotbeds and cold-frames, and protection of plants from insects. Three periods, third term. Mr. CRIDER.

Plant Life.—The structure of the leading types of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Second year. Two periods, first term. Mr. NORTON.

Diseases of Plants.—Practical instruction will be given concerning the chief fungous and bacterial diseases attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures. Second year. Three periods, second term. Professor FULTON.

Animal Husbandry.—Study of breeds, judging and management of live stock, animal breeding, and stock feeding. There will be lectures on all the above subjects, supplemented by practical work as far as possible. Second year. Three periods, first, second, and third terms. Professor McNUTT.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he becomes familiar with their construction and proficient in operating them.

The laboratory course is supplemented by lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairymen who handle dairy products, whether for home use or for commercial purposes. Four periods, third term. Mr. SANBORN.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Second year. Three periods, second and third terms. Mr. JEFFREY, Mr. TAYLOR.

Veterinary Science.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live stock to prevent diseases, and the treatment of some of the most common diseases. Second year. Three periods, first term. Doctor ROBERTS and Doctor KOONCE.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, second term; two periods, third term. Associate Professor METCALF.

Physics.—Properties of matter, fundamental units, British and metric standard measures, mechanics, liquids, gases, heat, introduction to light and sound. First Year. Two periods a week, three terms. Mr. LATANÉ.

Algebra.—Wells' *New Higher Algebra.* A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. First year. Five periods. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

English.—This is a thoroughly practical course in the elements of grammar and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading also is assigned for private study. First year. Three hours a week. Doctor SUMMEY and Mr. PECKHAM.

120. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Second year. Three periods. Required of Freshmen. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

Wood Shop.—The use and care of ordinary woodworking and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. First and second years. Mr. CLAY.

Forge Shop.—This course is designed to teach the use of the ordinary blacksmith's tools, and the making of the more common forgings, such as chains, hooks, etc. Required of One-year Agricultural Course, first term. Mr. WHEELER.

Drill.—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company, and battalion ceremonies, including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; gallery and range target practice. First and second years. Three hours each week for the first and second terms. Two hours each week required of all classes except Seniors. Captain PEACE and Cadet Officers of the Battalion.

c. TWO-YEAR COURSE IN VETERINARY MEDICINE.

As a consequence of the frequent inquiries concerning a course in Veterinary Medicine at this College and in a realization of the need of competent veterinarians for the live-stock and meat and milk inspection interests of the South, the first two years work in such a course is here outlined.

This arrangement is somewhat similar to the courses in human medicine given at other institutions in the State not offering a complete course.

This course is correlated with courses in other Veterinary Colleges, so that credit may be obtained in them for the subjects taken here.

There are a number of advantages to be gained by giving such a course in Veterinary Medicine at an Agricultural College where several of the fundamental subjects, especially along live-stock lines, are so aptly given.

Opportunity is given to Agricultural students in their Junior and Senior years to elect sufficient veterinary subjects to obtain credit for Freshman and Sophomore years in a Veterinary Course. See page 57.

For entrance requirements and fees, see pages 25 and 28.

FIRST AND SECOND YEARS IN VETERINARY MEDICINE.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Anatomy, 160, and Clinics, 161	3	3	3
Histology, 162	3	3	3
Materia Medica, 163	--	2	2
Physiology, 164	2	--	--
Botany, 165	3	3	3
Chemistry, 169	3	3	3
English, 168	3	3	3
Agriculture, 167	3	--	--
Breeds, 166	--	3	3
Drill	3	3	2
Totals	23	23	22

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Anatomy, 170, and Clinics, 171	3	3	3
Pathology and Bacteriology, 172	3	3	3
Materia Medica and Pharmacy, 173	3	--	--
Physiology, 174	2	2	2
Clinical Diagnosis, 175	--	3	3
Chemistry, 176	3	3	3
Physics, 177	2	2	2
Zoology, 178	2	2	--
Dairying, 181	--	--	4
Feeding, 179, and Judging, 180	3	3	--
Drill	3	3	2
Totals	24	24	24

160. Veterinary Anatomy.—This subject will deal with the study of the skeleton, including bones and joints, and of muscles and digestive organs. A complete dissection of the muscles of the horse will be made. Three periods. Required of First-year men in Veterinary Medicine. Doctor SIMMS.

161. Clinics.—An essential part of the training of students in comparative medicine consists in seeing for himself animals suffering with the various diseases discussed in the classroom. To this end abundant clinic material is available in the veterinary hospitals in Raleigh. Three periods. Required of First-year men in Veterinary Medicine. Doctors ROBERTS, KOONCE, and SIMMS.

162. Histology.—A microscopical study of the tissues of the body, treating of the cell as the unit of structure, and of its functions; also of tissues, their classification and their relation to the structure of the organs. From dissections, clinics, and proximity to slaughterhouses, abundance of histological material of various animals is received. Three periods. Required of First-year men in Veterinary Medicine. Professor ROBERTS and Doctor SIMMS.

163. Materia Medica.—A study of the drugs used in comparative medicine will consist of their classification, composition, physiological actions, and doses. Two periods, second and third terms. Required of First-year men in Veterinary Medicine. Professor ROBERTS.

164. Physiology.—This study will include a comparative study of the body functions of man and the domestic animals. The subject will be covered by lectures and recitations, demonstrations and laboratory exercises. Two periods. First term. Required of First-year men in Veterinary Medicine. Doctors ROBERTS and SIMMS.

165. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi and seed plants. The principles of plant-breeding, crossing, pollination, budding, and grafting are taught. The student's knowledge is made his own through field work and simple independent investigations. Three periods. Required of First-year men in Veterinary Medicine. Professor FULTON and Mr. ROSENKRANS.

166. Breeds of Live Stock.—A study of the origin, history, characteristics, adaptability, and popularity of the breeds of live stock. Every opportunity will be taken advantage of to teach the student the merits of the various breeds, and, when possible, classes of the breeds will be judged. Three periods per week, second and third terms. Required of First-year men in Veterinary Medicine. Professor MCNUTT and Mr. SANBORN.

167. Agriculture.—Elementary and popular lectures introductory to the subject of Agriculture in its broad sense. The simpler properties of soils; tillage, fertilizers, conservation of fertility; seed selection; crops of North Carolina, rotation, etc., will be briefly considered by lecture and practical demonstration in the laboratory and in the field. Three periods, first term. Required of First-year men in Veterinary Medicine. Professor NEWMAN.

168. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the plannings of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of First-year men in Veterinary Medicine. Professor HARRISON, Doctor SUMMEY, Mr. PECKHAM.

169. Inorganic Chemistry.—Brownlee's *First Principles of Chemistry*. The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Laboratory work accompanies the classroom work. Three periods. Required of First-year men in Veterinary Medicine. Professor WITHERS, Doctor WILLIAMS, and Mr. PATE.

170. Veterinary Anatomy.—A continuation of course 160. A study of the respiratory, circulatory, and nervous systems will be made, with complete dissection of each in the horse. Three periods. Required of Second-year men in Veterinary Medicine. Doctor ROBERTS.

171. Clinics.—These will be given as in the year previous and will give the student opportunity of putting into practice the information he has gained from the study of clinical diagnosis. In connection with the clinics, autopsies are frequently held, giving the students excellent opportunities to observe changes in body structure resulting from disease. Three periods. Required of Second-year men in Veterinary Medicine. Doctors ROBERTS, KOONCE, and SIMMS.

172. Pathology and Bacteriology.—A large number of specimens of diseased tissue already present in the museum and opportunity for collecting others from clinics and abattoirs insure plenty of material to demonstrate the various macroscopical and microscopical changes in organs and tissues due to disease. Especial attention is paid to the isolation and study of pathogenic bacteria from the various organs of diseased animals. Three periods. Required of Second-year men in Veterinary Medicine. Doctor SIMMS.

173. Materia Medica and Pharmacy.—Course 163 will be continued with prescription writing and laboratory work in the preparation, compounding and dispensing of medicines. Three periods, first term. Required of Second-year men in Veterinary Medicine. Doctor SIMMS.

174. Veterinary Physiology.—A comparative study of the bodily functions of the various domestic animals is made, with special reference to digestion, respiration, circulation, and secretion. Two periods. Required of Second-year men in Veterinary Medicine. Professor ROBERTS and Doctor SIMMS.

175. Clinical Diagnosis.—This subject is taught for the purpose of studying the methods for the examination of animals to detect and diagnose the various diseases affecting them. Three periods, second and third terms. Required of Second-year men in Veterinary Medicine. Professor ROBERTS.

176. Organic Chemistry.—Lectures and laboratory work. Moore's *Outlines of Organic Chemistry*. Three periods. Required of Second-year men in Veterinary Medicine. Professor WITHERS.

177. Elementary Physics.—Properties of matter; fundamental units; British and metric standard measures; definitions of force, work, and power; laws of motion; principles of machines; mechanics of fluids; heat, sound; introduction to study of light. Two periods. Required of Second-year men in Veterinary Medicine. Mr. Latané.

ZOOLOGY.

178. Zoology.—An elementary study of all forms of animal life—regarding their general structure and classification, with particular reference to type examples of the principal groups of some economic importance—is given by text-book, laboratory work, and supplementary lectures. The first term's work is devoted to invertebrates, but with only a brief study of the true insects. The second term covers vertebrate animals. This course is planned to give the student a general knowledge of the animal kingdom and to lay a foundation for the more special subjects that are to follow. Two periods, first and second terms. Required of Second-year men in Veterinary Medicine. Associate Professor Metcalf.

179. Stock Feeding.—A study of the composition of feeds and the food requirements of the domestic animals. The student will be required to become familiar with the fundamental principles so that he can compound suitable rations for the different classes of live stock. Especial emphasis will be laid upon practical problems in feeding. Three periods per week, first term. Required of Second-year men in Veterinary Medicine. Text-book, Henry's *Feeds and Feeding*. Professor McNutt.

180. Live-stock Judging.—A study of the score-card and its use. A comparison of the score-card for the various breeds, and practical scoring. Methods and rules in judging the various classes of live stock. In practical judging the student will be required to give oral or written reasons to sustain his placing of the animals. Three periods per week, second term. Required of Second-year men in Veterinary Medicine. Professor McNutt.

181. Dairying.—Text-book and lecture course covering the fundamental principles of modern dairying. The laboratory work consists of practice in the use of modern dairy equipment. Each student is required to become familiar with the construction, care, and operation of the leading makes of cream separators. Proficiency is required of the student in testing and standardizing milk and cream, and in cream-ripening, churning, working, packing, and scoring butter. Four periods each week, third term. Required of Second-year men in Veterinary Medicine. Mr. Sanborn.

MILITARY SCIENCE.

150. Drill.—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company and battalion ceremonies, including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; gallery and range target practice. Three hours each week for the first and second terms. Two hours each week required of all classes except Seniors. Seniors may elect either the drill or three hours extra in some other subject in its place. Captain PEACE and Cadet Officers of the Battalion.

ONE-YEAR COURSE IN AGRICULTURE.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Agriculture	3	2	3
Soils and Fertilizers	3	3	--
Animal Husbandry	3	3	3
Dairying	--	--	4
Veterinary Science	3	--	--
Poultry Husbandry	--	3	3
Fruit Culture	3	1	--
Vegetable Gardening	--	--	3
Plant Life	2	--	--
Diseases of Plants	--	3	--
Entomology	--	2	2
Woodwork	2	2	2
English	3	3	3
Drill	3	3	2
Totals	25	25	25

Agriculture.—The course in Elementary Agriculture will consist of lectures and recitations on crops, farm equipment, and farm machinery. One period per week will be devoted to practical exercises, including the identification and habit of growth of farm crops and the drawing of plans for farms and farm buildings. The work will be made practical and will be suited to the needs of the student. Three periods, first term; two periods, second term; three periods, third term. Professor NEWMAN and Mr. HODSON.

Soils and Fertilizers.—This will include the study of the soils of the State, their formation and classification into agricultural types; their physical properties, relations to moisture and air supply; best methods of conserving and regulating the soil moisture; principles and practice of drainage; effect of different soil and crop treatments, such as rotation, cultivation, and fertilization. Considerable attention will be given to humus, farm manures and green manures, and the use and home-mixing of fertilizers, with special reference to the time and methods of using and the best mixtures for the various crops on the different types of soil. Three periods, first and second terms. Associate Professor SHERWIN.

Animal Husbandry.—Study of breeds, judging and management of live stock, animal breeding, and stock feeding. There will be lectures on all the above subjects, supplemented by practical work as far as possible. Three periods, first, second, and third terms. Professor McNUTT.

Dairying.—This course is designed to give a good working knowledge of farm dairy operations.

The student while in the dairy laboratory uses the leading makes of separators, churns, butter-workers, Babcock testers, etc., until he becomes familiar with their construction and proficient in operating them.

The laboratory course is supplemented by lectures of a practical nature, covering the most important features of dairying. It is a course of study which should meet the requirements of the farmer and dairyman who handle dairy products, whether for home use or for commercial purposes. Four periods, third term. Mr. SANBORN.

Veterinary Science.—The lectures on this subject treat of elementary veterinary anatomy and physiology, the care of live stock to prevent diseases, and the treatment of some of the most common diseases. Three periods, first term. Doctor ROBERTS and Doctor KOONCE.

Poultry Husbandry.—Classification and study of the breeds of domestic poultry; breeding, feeding, and management; construction and location of poultry houses; production and marketing of eggs; production, killing, and marketing of poultry; capons and caponizing; incubation and brooding. Three periods, second and third terms. Mr. JEFFREY, Mr. TAYLOR.

Fruit Culture.—This course treats of fruit growing as applied to the different sections of the State and the possibilities embodied in its further development. A text-book on the general subject of fruit culture is supplemented by lectures on the leading fruits, dealing with the kind of soil for fruits and its preparation, laying out the orchard, varieties, methods of propagation, planting, cultivation, fertilizing, pruning, harvesting, and marketing.

Practical exercises are given in laboratory, orchards, and vineyards, which include budding, grafting, top-grafting; making of cuttings; pruning of fruit and ornamental trees; fruit bud studies; planting and transplanting; identification of varieties; packing; and handling of nursery stock. Three periods, first term. Mr. CRIDER.

Vegetable Gardening.—This course treats of the trucking industry of the State, and the growing of vegetables for home use. A text-book is used, supplemented by lectures on the growing, handling, and marketing of the leading vegetables.

Practical exercises are given in the laboratory and field which include germinative tests of seeds; seed sowing; methods of transplanting and culture; manipulation of garden tools; construction and management of hotbeds and cold-frames, and protection of plants from insects. Three periods, third term. Mr. Crider.

Diseases of Plants.—Practical instruction will be given concerning the chief fungous and bacterial diseases attacking farm crops, fruit trees, etc.; how to recognize them and how to prevent them, including instruction concerning the preparation of spraying mixtures. Three periods, second term. Professor Fulton and Mr. Norton.

Plant Life.—The structure of the leading types of plants is studied and the general principles of nutrition, growth, reproduction, are discussed in an elementary and practical way. Two periods, first term. Mr. Norton and Mr. Rosenkrans.

Entomology.—This is a short course in which the more noxious insects are studied, with special reference to methods of preventing their injuries. The various insecticides and methods of spraying are also included in this course. Three periods, second term; two periods, third term.

Wood Shop.—The use and care of ordinary woodworking and bench tools. Exercises in sawing, planing, and making joints. As much time as possible is spent in making models of small buildings, gates, etc. Two hours the three terms. Mr. Clay.

English.—This is a thoroughly practical course in the elements of grammar and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading also is assigned for private study. Three hours a week. Required of one-year students. Doctor Summey and Mr. Peckham.

Physics.—Properties of matter, fundamental units, British and metric standard measures, mechanics, liquids, gases, heat, introduction to light and sound. Mr. Latané.

Drill.—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company and battalion ceremonies, including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; gallery and range target practice. Three hours each week for the first and second terms. Two hours each week required of all classes except Seniors. Seniors may elect either the drill or three hours extra in some other subject in its place. Captain Peace and Cadet Officers of the Battalion.

WINTER SHORT COURSES IN AGRICULTURE.*

SIX-WEEKS COURSE IN GENERAL AGRICULTURE.

Begins January 6 and Ends February 15, 1913.

The College is frequently called upon to supply young men to take charge of farms of wealthy owners, and to operate dairies, fruit farms, truck and market gardens. The National Department of Agriculture, the State Experiment Stations, the Agricultural and Mechanical Colleges and the hundreds of commercial industries requiring scientifically trained men are eagerly seeking young men of such force and training as are given in the Agricultural and Mechanical Colleges. The demand is greater than the supply. The teaching of agriculture in the public schools and the organization of agricultural high schools, with agricultural instruction as an important feature, have met with a serious check for no other reason than that there are not enough trained teachers to supply the demand. This course is meant to help those (1) who want to cultivate their own farms with more knowledge and who want to keep informed as to recent improvements and recent farm literature; (2) who want to improve their teaching of agricultural subjects; (3) who want to specialize for a few weeks in some particular phase of farm industry.

EQUIPMENT.

The new Agricultural Building is devoted entirely to agriculture, and contains laboratories and classrooms built and furnished especially for the purposes for which they are used. Equipment is constantly being added and facilities for instruction become better every year. The professors in each department of the School of Agriculture are specialists in their chosen work, and are devoting their lives to study and to methods of improving rural life.

EXPENSES.

No tuition is charged for the Six-weeks Course, and board may be had in the mess-hall for $2.75 per week. The College will furnish lodging in the dormitories free if there is room. Room in the College buildings is very limited this year. Students who expect to room in the dormitories should provide themselves with bed cover, sheets, pillow-cases, and towels.

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*Details will be announced in Winter Course Circular, which is published in November of each year.

While engaged in work in the dairy laboratory, students are required to wear white suits. These suits may be had at $1 apiece. The total expense of the course need not exceed $25 over and above railroad fare.

ADMISSION.

No examinations are required for entrance to the Six-weeks Course. Any person over sixteen years of age may enter and enjoy the full privileges of the instruction. The greater part of the instruction is given in the form of lectures and laboratory work, and the full time of the student is provided for. Some of the evenings will be taken up by lectures on important subjects, and others by meetings of students for their mutual improvement.

The regular work of the Six-weeks Course begins January 6th, but all should arrive the day before, in order that board and room may be arranged for, and so that each man may be ready for the work when it begins.

Should further information be desired, either the President or the Professor of Agriculture will take pleasure in furnishing it.

OUTLINE OF SIX-WEEKS COURSES.

GENERAL AGRICULTURE.

Professor Newman and Mr. Hodson.

Farm Crops.—Selection of crops to be grown, and their economic relation to farm operations; preparation and cultivation; planting; seed selection and plant breeding on the farm; studies of the staple crops; corn, small grain, cotton, and legumes; special crops to be grown in association with the live-stock industry.

Farm Equipment and Farm Management.—Selection and laying out of farm; fences, roads, houses; tools and machinery; rotation; farming as a business.

SOILS AND FERTILIZERS.

Professor Sherwin.

This will include a study of the soils of the State; their formation and classification into Agricultural types; their physical properties; relation to moisture and air supply; best methods of conserving and regulating the soil moisture; principles and practices of drainage.

The effect of different soil and crop treatments, such as rotation, cultivation, and fertilization, will be studied. Considerable attention will be given to humus, farm manures and green manures, and to the use and home-mixing of commercial fertilizers, with special reference to the time and methods of using and the best mixtures for special crops on different types of soil.

AGRICULTURAL BOTANY.

Professor Fulton.

This course will consist of the practical study of the diseases of plants, how to recognize them and how to prevent them: bacteria, their nature, their effects for good or harm in the farm home, and how to control them, and their function in the soil as nitrogen gatherers; the cross-breeding of plants: how to accomplish it, its object, and the benefits to be derived therefrom.

BREEDS OF LIVE STOCK AND STOCK JUDGING.

Professor McNutt and Mr. Sanborn.

Lectures on this subject will treat of the characteristics of the different breeds of live stock.

The practical part of the work will be given in the judging-room, where the student is required to score the animals and pass upon their respective merits.

DAIRY FARMING.

Mr. Sanborn.

Lectures are given on the nature, composition, and secretion of milk; its uses and value as a food; the production and care of sanitary milk; management of dairy herd; details in the production of high-grade cream and butter; the marketing of dairy products, and their value when sold as milk, cream, butter, and cheese.

The dairy laboratory course, given in connection with the farm dairy lecture course, consists of twenty-four periods of two hours each, and comprises every detail of dairy work, butter-making, retailing milk, making cottage cheese and skim-milk buttermilk, pasteurizing milk and cream, making and using starters, and making tests of all sorts of dairy products, and standardizing milk and cream.

FEEDS AND FEEDING AND STOCK RAISING.

Professor McNutt.

Lectures on this subject will treat of the composition and digestibility of home-grown and commercial feeds, methods of calculating rations for different classes of farm animals, and suggestions as to the best and most economical feeds for the different classes of live stock.

An outline will also be given of the care and management of the most prominent breeds of live stock.

DAIRY EQUIPMENT.

The dairy laboratories occupy about 4,000 feet of floor space on the ground floor of the new Agricultural Building, besides the locker-rooms, toilet and bathrooms on the same floor, and the dairy lecture-room on the first floor, used by dairy students.

The main laboratory is 33 x 57 feet, and is fitted throughout with modern equipment, suited to giving up-to-date instruction in farm dairying, retailing milk, and creamery practice. The equipment for farm dairying consists in the main of De Laval, Sharples, Empire, National, and Simplex separators; swing and barrel hand churns of different sizes; cream vats; hand and power butter-workers; aërators and coolers; milk testers, and other articles useful in doing farm dairy work.

Recently a new dairy barn has been erected which is a model in dairy-barn construction, embodying every feature that goes to make a barn convenient and sanitary.

DISEASES OF LIVE STOCK.

Doctors Roberts and Simms.

To maintain the usefulness of animals and to advance the live-stock interests, all who handle live stock should have some knowledge of the causes of disease and the nursing of sick animals.

A general conception of the structures of the body and their uses being essential to competent judging and feeding of animals, as well as to a knowledge of disease, a short time will be given to this subject. The structures will be divided into groups, so that in a limited time one may gain a fair idea of the composition of the body. Comparisons will be made of the structures of the various farm animals with those of man. Mounted skeletons of the horse, cow, and man, in the lecture-room, enable the student readily to become familiar with this part of the body.

The lectures will include the care and management of live stock to prevent disease, and the nature, causes, and treatment of the more common diseases and injuries.

One period each week will be devoted to a clinic, where animals will be treated medicinally and operated upon. During the course there will be a practical demonstration of the tuberculin test upon the dairy herd.

HORTICULTURE.

Professor Pillsbury and Mr. Crider.

The course includes both lectures and field work, and is made especially applicable to North Carolina conditions.

Fruit Culture.—This includes a discussion of the fruit sections of the State, and the possibilities of fruit-growing in each section. This is followed by lectures on the culture of our leading fruits, which deal with the kind of soil, preparation of soils for fruits, and with varieties, planting, cultivation, fertilization, pruning, harvesting, and marketing. Special emphasis is laid on the home fruit garden.

Vegetable Gardening.—Lectures on the best methods of growing the leading vegetables for market and home use.

Laboratory Work.—Practice in plant propagation, such as budding, grafting, top grafting, pruning of fruit and ornamental trees; fruit-bud studies; planting and transplanting of trees and vegetables; construction of cold-frames and hotbeds.

Equipment.—The Horticultural Department is well equipped for this work. The College has a very complete fruit plantation, which includes all the standard varieties of the following fruits: apple, pear, peach, plum, cherry, quince, persimmon, pecan, fig, muscadine grapes, fox grapes, raspberries, dewberries, and strawberries; also a nursery where various methods of budding and grafting are carried on.

ENTOMOLOGY.

Associate Professor Metcalf.

The course in Entomology is intended to teach students the general facts concerning the common injurious and beneficial insects, with which every one should be familiar.

Insect injury to farm crops, fruit, and vegetables amounts annually to thousands and even millions of dollars. A conservative estimate has shown that fully 10 per cent of the values of all agricultural products is destroyed each year, and yet there are many farmers who know very little of the habits and life-history of the most common insects. We should know how insects pass the winter, when they are most easily destroyed or prevented, and the best methods of combating them.

The course will consist of a number of lectures, illustrated by specimens, photographs, and charts, to familiarize the student with the principal insects affecting general farm crops and fruit trees. Field observations will be made to study insects that may be found during January and February. The preparation and application of various spray mixtures for controlling insects, including the use of spraying apparatus, will be made a special feature of the work.

POULTRY RAISING.

Mr. Jeffrey and Mr. Taylor.

The subject of poultry raising will be considered from the farm standpoint. Instruction will include lectures and work with the fowls. Students will be told what to do and how to do it, and will also be required to do the work.

Instruction will be given in poultry-house construction, the breeds of fowls best suited to the farm, and their breeding, feeding, and management. Egg production and the production of market poultry will receive special attention. The former will be considered both from the standpoint of breeding and feeding, and the results obtained at our own and other Experiment Stations will be discussed. Market poultry will include the production of broiler or frying-size chickens, roasters, and capons. Incubation and brooding, both natural and artificial, will also be studied.

The Poultry Department is equipped with thirty breeding pens of several different types; a good incubator cellar, and several different makes of incubators; a brooder-house and both indoor and outdoor brooders of both the heated and fireless types, and a feed-room with steam engine and both grist and bone mills. Good specimens of ten different varieties of poultry best suited to farm requirements are kept so that students may become familiar with the requirements of the different breeds.

Students wanting to specialize in poultry will be given extra work in this department, taking charge of a pen of fowls, operating an incubator, raising chicks in a brooder, and keeping all the records necessary in poultry work.

ONE-WEEK COURSE IN FARM DRAINAGE.

This course is intended to meet the needs of farmers who want instruction in practical drainage. Methods of leveling which the average farmer can practice on his land are discussed and practiced. It is intended to show where to drain, how to get proper grades and size of tile needed, and how to lay the tiles. The work is mostly practice and is adapted to the needs of the average farmer who wishes to learn more about draining the wet parts of his land. It does not give information regarding projects which are properly engineering problems.

This course will be given beginning November 30, 1912.

For further information, write to M. E. SHERWIN, West Raleigh, N. C.

AGRICULTURAL EXTENSION.

The Department of Agricultural Extension was organized July 1, 1909. This department was and is made possible by the help of the General Educational Board in the United States. The work is closely correlated with that of the United States Department of Agriculture. The object of this department is to link the scientific agricultural work of the College and Station to the practical work on the farms of the State. Each year the trained scientific workers of America add to the fund of information needed by progressive farmers. The object of this department is to carry this information to the busy men on the farm, and to help in the teaching of farm science in our schools. This is done by addresses to farmers, by farm schools held in different sections, holding seed-corn days, organizing boys' corn clubs, and in such other ways as time and occasion may permit. Professor I. O. SCHAUB.

ENGINEERING COURSES.

Four-year Courses in

- II. Civil Engineering.
- III. Mechanical Engineering.
- IV. Electrical Engineering.
- V. Chemistry.

COURSE IN CIVIL ENGINEERING.

The aim of the course in Civil Engineering is to give such training as will enable our young men to take an active part in the work of advancing our State along material lines—developing its water-power, building railroads and public highways, constructing water supply and sewerage systems for our towns, etc. The student is given a large amount of practical work in the field and draughting-room, and acquires a fair degree of efficiency in the use of the various surveying instruments, and in draughting. At the same time it is recognized that a successful engineer requires a well-trained mind —one that reasons logically, accurately, and quickly. Therefore a thorough course is given in all those branches of applied mathematics which are involved in the solution of engineering problems.

The aim has been to make this preëminently a technical course; but subjects of general culture are included in order to give the student a broader mental training and better preparation for social and business life.

II. The Four-year Course in Civil Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 230†	2	2	2
Woodwork, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2
Totals	22	22	21

Sophomore Year.

Architecture, 220	2	--	--
Architectural Drawing, 221	2	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Descriptive Geometry, 200	--	2	2
Physics, 281	2	2	2
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
American Literature, 361	3	3	3
Military Drill, 390	3	3	2
Military Tactics, 391	1	1	1
Totals	23	23	22

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*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Road Building, 212	1	1	1
Surveying, 202, 206	2	2	2
Surveying (field work), 207	2	2	2
Construction, 205	2	--	--
Topographical Drawing, 200, 203	2	2	2
Graphic Statics, 201	--	2	2
Mechanics, 204	3	3	3
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
English, 362, 363	3	3	3
Military Drill, 390	3	3	2
Spanish (elective), 372	3	3	3
Totals	23	23	22

Senior Year.

Mechanics of Materials, 214	3	--	--
Roofs and Bridges, 209	3	--	--
Bridge Design, 210	--	3	3
Municipal Engineering, 211	--	2	2
Surveying (field work), 208	2	--	--
Hydraulics, 216	--	2	2
Calculus, 346	3	--	--
Railroad Engineering, 206	3	3	3
Reinforced Concrete, 214	--	2	2
Astronomy, 212	--	2	2
Laboratory, 217	--	2	2
Mechanics, 203	2	--	--
English Literature, 364	2	2	2
Economics, 380	1	1	1
Elect one of the following:			
Military Drill, 390	3	3	2
Modern Languages, 370, 372	3	3	3
Totals	22	22	22

CIVIL ENGINEERING.

Equipment.

There is a complete equipment of all instruments necessary to civil engineering field work. The classrooms, drawing-rooms, and laboratories are in Winston Hall.

Subjects of Instruction.

200. Descriptive Geometry, Stereotomy.—Text-book, lectures, problems, and completed drawings. Two periods, second and third terms. Required of Sophomores in Civil Engineering. Assistant Professor MANN and Mr. POOLE.

201. Graphic Statics.—Determination of stresses in frame structures by graphical methods. Lectures and original problems. Two periods, second and third terms. Required of Juniors in Civil Engineering. Assistant Professor MANN.

202. Surveying.—Land surveying, leveling, elements of triangulation, topographical surveying, roadmaking. Merriman's *Land Surveying*. Two periods, first term. Required of Juniors in Civil Engineering. Assistant Professor MANN.

203. Topographical Drawing.—Conventional signs, computations, forms of field notes, methods of platting, completed map from field notes. Two periods. Required of Juniors in Civil Engineering. Assistant Professor MANN.

204. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, dynamics of a rigid body, momentum and impact, work, power, friction, application of principles to various engineering problems. Three periods. Required of Juniors in Civil Engineering. Two periods, first term. Required of Seniors. Assistant Professor MANN.

205. Construction.—Masonry, foundations, railroads, dams, retaining walls, arches, etc. Baker's *Masonry Construction*. Lectures. Two periods, first term. Required of Juniors in Civil Engineering. Assistant Professor MANN.

206. Railroad Engineering.—Reconnaissance, preliminary and location surveys, cross-sections, compound curves, spirals, etc. Searles' *Field Engineering*. Two periods, second and third terms. Required of Juniors in Civil Engineering. Three periods. Required of Seniors in Civil Engineering. Assistant Professor MANN.

207. Surveying.—Field work. Use of instruments, compass, level, transit, and plane table. Practical work in land surveying, topography, leveling, railroad surveying, working up notes, and platting. Two periods. Required of Juniors in Civil Engineering. Assistant Professor Mann, Mr. Poole, and Mr. Tucker.

208. Surveying.—Field work. Triangulation and topography, surveys for sewers, waterworks, etc. Two periods, first term. Required of Seniors in Civil Engineering. Assistant Professor Mann, Mr. Poole, Mr. Tucker.

209. Roofs and Bridges.—Determination of stresses in roof and bridge trusses by the analytical method. Merriman's *Roofs and Bridges.* Original problems. Three periods, first term. Required of Seniors in Civil Engineering. Mr. Poole.

210. Bridge Design.—Calculation of stresses, design, specifications, and estimate of cost of a wooden roof truss and a steel railway bridge. Three periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

211. Municipal Engineering.—Text-books, lectures. Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

212. Road Building.—Text-book on construction of roads, streets and pavements. Lectures on practical roadmaking in North Carolina. One period. Required of Juniors in Civil Engineering. Professor Riddick.

213. Astronomy.—Determination of azimuth, latitude and longitude, and time. Comstock's *Astronomy for Civil Engineers.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Professor Riddick.

214. Reinforced Concrete.—Turneaure & Maurer's *General Theory of Concrete and Steel Construction.* Problems in beams, columns, retaining walls, etc. Two periods, second and third terms. Required of Seniors in Civil Engineering. Assistant Professor Mann.

215. Mechanics of Materials.—Study of stresses in beams, columns, etc. Merriman's *Mechanics of Materials.* Three periods, first term. Required of Seniors in Civil Engineering. Professor Riddick.

216. Hydraulics.—Methods of measuring flow of streams, laws governing flow in pipes and conduits, determination of water-power in streams, testing of hydraulic motors. Text-book. Merriman's *Hydraulics.* Two periods, second and third terms. Required of Seniors in Civil Engineering. Two periods, second and third terms. Required of Seniors in Mechanical and Electrical Engineering. Professor Riddick.

217. Laboratory.—Tests of cement and other materials. Hydraulic measurements. Two periods, second and third terms. Required of Seniors in Civil Engineering. Mr. Mann, Mr. Poole.

ARCHITECTURE.

220. Architecture.—Building materials, methods of constructing buildings, plans, specifications, bill of materials, estimate of cost, design of buildings. Lectures. Two periods, first term. Required of Sophomores in Civil Engineering. Professor RIDDICK.

221. Architectural Drawing.—Drawings from a building already constructed, design of a dwelling, detail and perspective drawings. Two periods. Required of Sophomores in Civil Engineering. Assistant Professor MANN and Mr. POOLE.

FOUR-YEAR COURSE IN MECHANICAL ENGINEERING.

The regular four-year course in Mechanical Engineering offers a training in the fundamental principles of design, construction, manufacture, and operation of all classes of standard and special machinery, and their economic application to railroads, steamships, mills, shops, factories, and power plants, as well as in the technical and executive management of the manufacturing and transportation industries. To this end the course of instruction is as broad as is possible to give in a technical school.

The course begins with a thorough training in mathematics, physics, and chemistry as a foundation for the appropriate technical work which is developed along several parallel lines. Applications of these fundamental sciences to the physical properties of the materials of construction, especially the metals and their practical manipulation, lead through the courses in mechanics, resistance of materials, shop processes, the materials-testing laboratory, drafting and kinematics, to the principles of design, which are fixed by application to the design of machinery for the execution of any kind of process in which machinery is either absolutely essential or more economical than corresponding hand execution of the same process. The principles underlying the performance of machinery are developed by courses in thermodynamics, mechanics, and hydraulics, with experimental laboratory demonstrations. The instruction in the performance, design, and manufacture of machine and power units in the classroom and laboratory, supplemented by visits to power plants and factories, is the basis of the work on the design of plants and mills.

To success in any one of these particular branches or phases of this profession a thorough technical training is absolutely indispensable, for it supplies the broad, general foundation, which must in its turn be supplemented by practical experience and by contact with the special line of work chosen.

III. The Four-year Course in Mechanical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing, 230	2	2	2
Woodwork, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	3
Totals	22	22	22

Sophomore Year.

Descriptive Geometry, 231	2	--	--
Mechanical Drawing, 232	--	2	2
Foundry, 237	2	--	--
Pattern-making, 238	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Physics, 281	2	2	2
Physical Laboratory, 283	1	1	1
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
American Literature, 361	3	3	3
Military Drill, 390	3	3	2
Military Tactics, 391	1	1	1
Totals	24	24	23

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Steam Engines and Boilers, 241	3	3	3
Mechanics, 250	2	2	2
Machine Design, 233	2	2	2
Machine Shop, 239	2	2	2
Electrical Engineering, 285	2	2	2
Electrical Laboratory, 290	1	1	1
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
English, 362, 363	3	3	3
Military Drill, 390	3	3	2
German (elective), 370	3	3	3
Totals	23	23	22

Senior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Applied Mechanics, 251	3	--	--
Mechanics of Materials, 252	--	2	2
Machine Design, 234	3	2	2
Machine-shop Work, 240	2	2	2
Power Plants, 243	3	3	--
Gas Engines, 244	3	--	--
Industrial Engineering, 245	--	2	--
Power Transmission, 242	--	--	2
Heating, Ventilation, and Refrigeration, 247	--	2	3
Power-plant Design, 248	--	2	2
Surveying, 246	--	--	2
Steam Engineering Laboratory, 249	2	2	2
Calculus, 346	3	--	--
Hydraulics, 215	--	2	2
Elect three periods of the following:			
Military Drill, 390	3	3	2
Modern Languages, 370, 371, 372	3	3	3
English, 364	2	2	2
Economics, 380	1	1	1
Totals	22	22	22

MECHANICAL ENGINEERING EQUIPMENT.

Buildings.—The drawing-rooms, recitation-rooms, the forge shop, wood shop, machine shop, and mechanical laboratory are in the Mechanical Building. The Power Plant is also utilized for experimental engineering. The building formerly used as a boiler plant is now used as a foundry.

Drawing-rooms.—There are two of these, one accommodating the Freshmen, the other those in the higher classes. These are equipped with drawing tables, board and filing cabinets, models of valves, pumps, machine parts, etc., etc. They are well lighted, heated, and ventilated, and are well adapted to the work.

Forge Shop.—This well-lighted and ventilated room is 30 x 40 feet. It is equipped with twenty-eight forges, blast being furnished from a Sturtevant blower; two emery and two buffing wheels; a Buffalo Forge Company's hand drill; an overhead exhaust system operated by a 60-inch Sturtevant exhaust fan, for removing smoke and gases from the fires; anvils and all necessary hand tools.

Wood Shop.—The woodworking equipment consists of fifteen double carpenters' benches which accommodate thirty students, and all necessary tools for each bench; thirty 12-inch turning lathes, each lathe being fully equipped with turning tools; a rip and a cut-off saw bench, foot-feed with dado attachment; a double revolving rip and cut-off saw bench, with dado attachment; a 20-inch surface planer; a 12-inch hand-jointer or buzz planer; a universal boring machine; a 6½-inch tenoning machine with cope heads; a 6-inch sash and blind sticker; a 34-inch band saw; a jig-saw; a shaper or edge-moulding machine, with a very complete set of moulding cutters; a chain mortiser; a dovetailing machine; a 38-inch grindstone; a wood trimmer; an adjustable miter box; a steam glue-heater, and a large assortment of screw and bar clamps, both iron and wooden.

Machine Shop.—This contains a 16-inch Davis & Egan lathe with 10-foot bed, a 14-inch Windsor lathe with 5-foot bed, a 13-inch Barnes lathe with 5-foot bed, a 14-inch Putnam lathe with a 4-foot bed, a 14-inch Champion lathe with 6-foot bed, a 14-inch Flather lathe with a 6-foot bed, three 14-inch lathes with 6-foot beds (built in College shops by students), a 26-inch by 44-inch by 12-foot bed McCabe double-spindle lathe, an 18-inch Prentiss shaper, a 24-inch upright Bickford drill press, 32-inch American drill press, a Brown & Sharpe universal milling machine with all attachments, a 20-inch by 5-foot Pease planer, one large and one small emery tool-grinding machine, a Greenwich arbor press, an electric center grinder, a Whiton centering machine, and a twist drill grinder. The machines have full equipment of chucks, rests and tools. The benches are well provided with vises.

Foundry.—This will accommodate about thirty students at one time. The floor is 30 x 60 feet, and the equipment consists of a Northern Engineering Works 36-inch cupola, with blast furnished by a Buffalo blower, a Griffen oil-burning furnace with air furnished by a No. 0 Sturtevant high-pressure blower, and oil by a Goulds triplex pump. There is also a crucible brass furnace of good size. For moulding machines the foundry is equipped with an Arcade squeezer and a Model moulding machine, both made by the Arcade Manufacturing Company and a Pridmore moulding machine made by Henry Pridmore. A Cadet core oven and all necessary tools for bench and floor work complete the equipment.

Laboratory.—This department is fairly well equipped with the necessary apparatus for performing commercial tests on the various mechanical engineering problems.

For general laboratory there are various measuring instruments, thermometers, pyrometers, steam-engine indicators, planimeters, tachometers, pressure and vacuum gages, a Crosby gage tester, steam calorimeters, both throttling and separating, an Emerson fuel calorimeter for testing coal and oils, apparatus for testing oil for flash point, burning point, and viscosity, an apparatus for flue-gas analysis and apparatus rigged for making calibration tests on thermometers, indicator springs, and steam gages.

For the work in steam engineering there are the following: A 40-horse power Skinner automatic engine, to which is connected a Wheeler surface condenser with a Blake air pump; a 25-horse-power steam engine; a 10-horse-power engine; apparatus arranged for making tests on injectors, pumps, flow of fluids through orifices and nozzles. Besides the above, which are used only for experimental purposes, the College power plant with a 100-horse-power Skinner automatic steam engine, a 135-horse-power DeLaval steam turbine, with all auxiliaries, as well as the boiler equipment—consisting of two 200-horse-power Atlas and two 75-horse-power Babcock and Wilcox water tube boilers—are all available for tests.

For making efficiency and economy tests on gasoline and oil engines, the following equipment is available: One 11-horse-power Foos gasoline engine, one 2-horse-power International Harvester Company gasoline engine, one 2-horse-power McVicker gasoline engine, one 16-horse-power Ford automobile engine, and a 1-horse-power engine built in the shops. To this collection it is hoped to add one or two oil engines in the near future.

For the course in testing of materials the following is available: a 500,000-pound Riehlé automatic testing machine arranged for tensional, compression, and transverse tests; a 15,000-pound Olsen testing machine for small specimens, and necessary auxiliary apparatus, such as micrometers, extensometers, etc., for obtaining results of the various tests.

Subjects of Instruction.

230. Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of descriptive geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Two periods. Required of Freshmen and first-year Short Course men. Mr. Coburn.

Note.—Each student will be required to furnish, at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies the department keeps for sale practically at cost the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit $10:

Drawing board, 22 x 32 inches.
T-square, 30 inches.
60° triangle, 9 inches, transparent.
45° triangle, 7 inches, transparent.
12-inch triangular architect's scale.
4 H pencil. H or F pencil.
Erasers for ink and pencil.
Penholder with fine points.
Pencil sharpener.

Instrument set consisting of:
6-inch compass with pen, pencil, and lengthening bar.
5½-inch dividers with hair-spring adjustment.
3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
5½-inch ruling pen, 4½-inch ruling pen.

231. Descriptive Geometry.—General definitions; third angle; representation of points, lines, and planes; profile plane; projected views; line and plane essentials; relations of points, lines, and planes in space; intersection of lines and planes; curved surfaces; development of surfaces; plane sections of solids. During the term many practical problems are given for solution and construction. Two periods. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisite, Mechanical Drawing 230. Professor SATTERFIELD and Mr. MORRIS.

232. Mechanical Drawing.—Making drawings and calculations setting forth the general principles of Descriptive Geometry. The design of cams to give specified motions and problems in elementary machine design. Two periods, second and third terms. Required of Sophomores in Mechanical and Electrical Engineering. Prerequisites, Mechanical Drawing 230 and Descriptive Geometry 231. Mr. MORRIS.

233. Machine Design.—A study of materials used in machine construction; analysis of stresses in machine parts; design of machine parts, considering them as compression, tension, or torsion members; modification of the above to suit practice and for the sake of general appearance. Design of simple machines, such as shears, punches, air hoists, riveters, etc., all calculations to be made in standard form and handed in with the assigned problem. Two periods throughout the year. Required of Juniors in Mechanical and Electrical Engineering. Prerequisites, Descriptive Geometry 231 and Mechanical Drawing 230 and 232. Assistant Professor ELLIS.

234. Machine Design.—Advanced Machine Design based on the thermal and mechanical problems involved in the design of a steam engine for power, economy, and regulation. The students are given the requirements of the engine—such as speed, regulation and point of cut-off for required horse-power—and are required to make calculations for the same; draw all theoretical diagrams from the ideal indicator card to the rectified tangential pressure diagrams; valve diagrams, showing different events of valve; details of cylinder, frame, fly-wheel, governor, etc. Three periods, first term; two periods, second and third terms. Required of Seniors in Mechanical Engineering. Prerequisites, Machine Design 233, Mechanics 250, and Heat Engines 241. Assistant Professor ELLIS.

235. Woodwork.—The use and care of the ordinary woodworking bench tools. Exercises in laying out and working from drawings, sawing, planing, and making of joints. The use and care of woodworking machines such as saws, planers, shapers, dovetailers, tenoners, etc. Exercises in wood-turning. Work on repairs about the College. Two periods. Required of Freshmen and first-year Short Course. Mr. CLAY.

236. Forge Work.—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf, and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer. Special work on equipment and repairs about the College. Required of Freshmen and first-year Short Course. Two periods, recitations and exercises, first and second terms. Mr. WHEELER.

237. Foundry.—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of Freshmen. Two periods, third term. Sophomores in Mechanical and Electrical Engineering and second-year Short Course. Two periods, first term. Mr. PARK and Mr. WHEELER.

238. Pattern-making.—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting; the making of special patterns; cores and core-boxes; introducing draft, shrinkage, finish, and the appliances and usages of modern pattern work. Required of Sophomores in Mechanical and

Electrical Engineering. Two periods, second and third terms. Prerequisite, Woodwork, 235. Mr. CLAY and Mr. MORRIS.

239. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling and shaper work. Two periods. Required of Juniors in Mechanical Engineering. One period. Required of Juniors in Electrical Engineering. Mr. PARK.

240. Machine-shop Work.—Making the parts of some machine, or of an engine. Making tools, such as taps and reamers. Laying out work. Working from drawings, duplicate and interchangeable parts. Working to standard gauges. Two periods. Required of Seniors in Mechanical Engineering. Mr. PARK.

241. Heat Engines.—A study of elementary thermodynamics, properties of steam, calorimeters and mechanical mixtures, combustion and fuels, boilers and boiler auxiliaries, steam engines, including types and details, valve gears, and governors; layout and necessary calculations for steam-engine testing, condensers, and air pumps, steam turbines, gas engines, and economy of heat engines. Three periods throughout the year. Required of Juniors in Mechanical Engineering. Two periods throughout the year. Required of Juniors in the Electrical and Textile Engineering. Prerequisites, Physics 281 and Advanced Algebra 343. Professor SATTERFIELD and Mr. VAUGHAN.

242. Transmission of Power.—This work includes a study of the methods employed for the transmission and measurements of power in machine shops and factories, and review of experiments which have been made to determine the efficiency of the various systems of power-transmission machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

243. Mechanical Engineering of Power Plants.—A critical study of steam boilers and furnaces, of boiler-room accessories, of coal and ash handling, and of piping, steam engines, steam turbines, pumps, condensers, traps, separators, etc. Special attention is paid to the conditions under which different equipment would be used, and to the selection of the apparatus, also to the cost of power, depreciation, repairs, etc. Three periods, first and second terms. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

244. Gas Engines.—Thermodynamics of the gas engine, theoretical comparison of various types of internal combustion engines. Combustion, including combining weights and volumes, heating value, air required, etc. Gas-engine fuels; solid, liquid, and gas. Gas producers, carburetors, and vaporizers. The fuel mixture, pressure, and temperature resulting from combustion. Modern types of internal combustion engines, auxiliaries, including ignition, starting apparatus, and mufflers; regulation, efficiency, and economy. Three periods, first term. Required of Seniors in Mechanical Engineering. Prerequisites, Heat Engines 241 and Mechanics 250. Mr. VAUGHAN.

245. Industrial Engineering.—A study of the origin and principles of the Industrial System; the nature and distribution of expense; labor; materials, etc. Two periods, second term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

246. Surveying.—A brief course teaching the use of the level and transit in locating buildings, laying out foundations, and lining up shafting, engines, and machinery. Two periods, third term. Required of Seniors in Mechanical Engineering. Assistant Professor MANN and assistants.

247. Heating, Ventilation, and Refrigeration.—This subject treats of the various methods of heating, such as by open fires, hot air, steam and hot water; of the proper ventilation of all types of buildings; of methods of utilizing the waste heat from power plants for the heating of buildings; of the various types of ice-making and refrigerating machinery, and their installation, care, and management; and of the cost of heating and cooling. Two periods, second term; three periods, third term. Required of Seniors in Mechanical Engineering. Professor SATTERFIELD.

248. Power Plant Design.—A study of the selection, location, and proportioning of the essential details of steam and gas power plants, such as engines, boilers, pumps, piping, condensers, feed water heaters, chimneys, etc. The course consists of the study of references, lectures on the subject, and the drawing of plans of plants showing all details. Two periods, second and third terms. Required of Seniors in Mechanical Engineering. Prerequisite, Heat Engines 241. Assistant Professor ELLIS and Mr. VAUGHAN.

249. Steam Engineering Laboratory.—Calibration of the various instruments used in performing tests on various mechanical engineering problems. Practice in the use of calorimeters, both steam and fuel; indicators, planimeters, etc. Testing of lubricants for flash point, burning point, and viscosity. Checking the formulas used in determining the flow of fluids through orifices and nozzles. Efficiency tests of boilers, steam engines, injectors, pumps, and gasoline and oil engines. Testing of materials used in engineering construction. Two periods throughout the year. Required of Seniors in Mechanical Engineering. One period throughout the year. Required of Seniors in Electrical Engineering. Prerequisites, Heat Engines 241 and Mechanics 250. Mr. VAUGHAN and Mr. MORRIS.

250. Mechanics.—Nature and measurement of forces, moments, conditions of equilibrium, moment of inertia, laws of motion, constraining and accelerating forces, momentum and impact, work power, friction, application of principles to various engineering problems. Elasticity and mechanics of fluids. Preparatory to Applied Mechanics 251. Two periods throughout year. Required of Juniors in Mechanical and Electrical Engineering. Prerequisites, Physics 280, Algebra 240, and Trigonometry 344. Mr. VAUGHAN.

251. Applied Mechanics.—A study of the laws of equilibrium and motion as applied to a particle or to a rigid body; analytic treatment of stresses in structures; center of gravity, moment of inertia, energy and work, friction and dynamics of machinery. Three periods, first term. Required of Seniors in Mechanical and Electrical Engineering. Prerequisites, Mechanics 250. Assistant Professor ELLIS.

252. Mechanics of Materials.—A study of the effects of loads and forces in engineering structures by use of the stress-strain diagram. Determination of ultimate stress and elastic limit of materials, with investigation for maximum and minimum bending moment and shear. Torsion and its application to shafting, with theories as to elastic limit and failure. Two periods, second and third terms. Required of Seniors in Mechanical and Electrical Engineering. Prerequisites, Mechanics 250 and 251. Assistant Professor ELLIS.

TWO-YEAR COURSE IN MECHANIC ARTS.

In order to meet the necessities of young men who wish to prepare themselves for the industrial arts rather than for industrial science and art, the following two-year course in Mechanic Arts is offered.

This course does not lead to graduation, and it is not, in any sense, intended as a preparatory course for the regular four-year classes. It is designed simply to help young men better fit themselves by a year or two of practical work under competent and interested supervision, for their chosen sphere of industrial activity.

Those students whose inclinations, limitations, or necessities lead them to take this course will be carefully drilled in the handicraft of their art and in the application of elementary science to the shop, drawing-room, and power plant.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Mechanical Drawing	3	3	3
Woodwork	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Mechanical Technology	2	2	2
Physics	2	2	2
Algebra	5	5	--
Plane Geometry	--	--	5
English	3	3	3
Military Drill	3	3	2
Totals	22	22	21

Second Year.

Machine Drawing	3	3	3
Machine-shop Work	3	3	3
Power Machinery	3	3	3
Algebra	5	2	--
Geometry	--	3	5
English	3	3	3
Drill	3	3	3
Elective work:			
Machine Shop or Drawing	2	2	2
Pattern Work	--	2	2
Foundry	2	--	--
Totals	24	24	24

SUBJECTS OF INSTRUCTION.

First Year.

Mechanical Drawing.—Instruction in care and use of instruments; lettering, geometrical drawing; projection drawing; isometric and cabinet projections; drawings from working sketches of machine details; tracing; blueprinting; elements of Descriptive Geometry; cylinders; cones; prisms; intersections and developments; miscellaneous problems. Three periods. Mr. COBURN.

Note.—Each student will be required to furnish at his own expense, the following outfit. To insure uniformity in grade of instruments and other supplies, the department keeps for sale, at practically cost, the articles named below. These may be purchased elsewhere, but must be approved by the department. Estimated cost of outfit, $10:

Drawing board 21 x 30 inches.
T-square 30 inches.
60° triangle 9 inches, transparent.
45° triangle 7 inches, transparent.
12-inch triangular architect's scale.
Irregular curve.
4 H pencil. H or F pencil.
Erasers for ink and pencil.
Penholder with fine points.
Pencil sharpener.

Instrument set consisting of:
6-inch compass with pen, pencil, and lengthening bar.
5½-inch dividers with hairspring adjustment.
3-inch bow dividers, 3-inch bow pencil, 3-inch bow pen.
5½-inch ruling pen, 4½-inch ruling pen.

Woodwork.—The use and care of the ordinary woodworking bench tools. Exercises in laying out and working from drawings; sawing, planing and making of joints. The use and care of woodworking machines, such as saws, planers, shapers, dovetailers, tenoners, etc. Exercises in wood-turning. Work on repairs about the College. Two periods. Mr. CLAY.

Forge Work.—Treatment of iron and steel, the uses of the fuller, swage, punch and set hammer; drawing and upsetting; butt, scarf, and jump welding; making of forge and machine shop tools, with tempering of tool steel; exercises on power hammer. Special work on equipment and repairs about the College. Two periods, first and second terms. Mr. WHEELER.

Foundry.—Recitations and exercises in foundry work, including working condition of the sand, use and care of tools, moulding, core-making, management of cupola and crucible furnaces in iron and brass melting. Required of first year. Elective for second year. Two periods, third term. Mr. PARK and Mr. WHEELER.

Mechanical Technology.—Classification and uses of woodworking and forging tools and machines. Methods of woodworking and forging. Arrangement, sizes, and care of belting and shafting; elementary power problems, steel-making, etc. Two periods. Professor SATTERFIELD.

Short-course English.—This is a thoroughly practical course in the elements of grammar, and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class, and supplementary reading is assigned for private study. Three hours a week. Required of first-year students. Doctor SUMMEY and Mr. PECKHAM.

Physics.—Properties of matter, fundamental units, British and metric standard measures, mechanics, liquids, gases, heat, introduction to light and sound. Two periods. Mr. LATANÉ.

Second Year.

Machine Drawing.—Sketching and drawing of machine parts and machines. Detail working drawings. Tracing and blueprinting. Two periods. Prerequisite, Mechanical Drawing 230. Assistant Professor ELLIS.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper-work. Two periods. Mr. PARK.

Power Machinery.—Descriptive study of the machinery of steam power plants, engines, boilers, condensers, pumps, steam turbines, piping, care and management, study of gas and oil engines. Combustion of fuels. Indicators; indicated, brake, and boiler horse-power problems. Three periods. Mr. MORRIS.

Algebra.—Wells' *New Higher Algebra*. A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, embracing the subjects of factoring, fractions, simple equations, simultaneous involution, evolution, theory of exponents, and radical equations in two or more unknowns. Five periods, first and second terms. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

Plane Geometry.—Wentworth's *Plane and Solid Geometry*. Three books of Plane Geometry, including numerous original exercises. Five periods, third term. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

Pattern-making.—A study of pattern-making in its relation to moulding; the practical construction of patterns to prevent warping and twisting; making of special patterns, cores, and core-boxes, introducing draft, shrinkage, finish, and the appliances and usages of modern pattern work. Prerequisite, Woodwork. Elective for second year. Two periods, second and third terms. Mr. CLAY and Mr. MORRIS.

Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; two periods, second term. Prerequisite: For first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent on the work of the first term. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

Plane Geometry.—Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Prerequisite, entrance requirements. Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

FOUR-YEAR COURSE IN ELECTRICAL ENGINEERING.

The four-year course in Electrical Engineering is planned for those who wish a thorough practical preparation for following this profession. Only the most thorough training in the fundamental laws and principles of electricity and magnetism will suffice as a preparation for this branch of engineering in which the art is advancing so rapidly. This training is given by a careful study of text-books and coördinated work in the various laboratories. The department, as will be seen from the equipment described below, is well supplied with dynamos, motors, transformers, and other electrical machines, and with testing instruments and apparatus of all descriptions.

PHYSICS.

A thorough training in the elements of Physics is necessary as a preparation for entering any engineering profession. The course in Physics is planned with this specific object in view. Instruction in the classroom is accompanied by laboratory courses laid out so as to illustrate the principles taught in the former. and also so as to train the student to observe accurately and to give him considerable facility in the manipulation of scientific instruments. During the first year the subjects of mechanics, hydraulics, pneumatics, heat, light, sound, and electricity and magnetism are taken up. In the second year a more thorough study of general physics is made.

Brief courses in Physics are given for students in Agriculture and Textile Industry and an elementary course is given to students in the short courses in Mechanic and Textile Arts, and Agriculture.

Equipment.

The laboratories and classrooms for the work in Physics are in the basement of Holladay Hall, practically the whole floor being given up to this department. There are two large, well-equipped classrooms and every facility for giving experimental lectures; and there are two large. well-lighted laboratories, one for the first-year course in Physics and the other for advanced physical measurements. Special attention has been paid to the equipment of these laboratories, the object being to enable the student to determine from his actual experience the truth of the principles which he learns in the classroom.

FRESHMAN PHYSICS.

280. Properties of matter; fundamental units; English and metric standard measures; definitions of force, work, power; laws of motion; principles of machines; mechanics and fluids; heat; sound; light; electricity and magnetism. Text-book. Milliken and Gale's *A First Course in Physics.* Four periods. Required of Freshmen in Engineering and Chemistry. Mr. LATANÉ, Mr. PRITCHETT.

FRESHMAN PHYSICAL LABORATORY.

282. Practice in handling units in British and metric systems; composition and resolution of forces; the lever; the inclined plane; the pendulum; density; specific gravity; thermometer calibration; calorimeter; hydrometry; expansion of materials; wave lengths; laws of strings; laws of lenses and mirrors; reflection; magnetism; electrostatics; the electric circuit. One period. Required of Freshmen in Engineering and Chemistry. Mr. LATANÉ, Mr. PRITCHETT.

SOPHOMORE PHYSICS.

281. An advanced course in Physics, particular attention being given to mechanics, fluids, and gases, heat, and electricity and magnetism. Two periods. Required of Sophomores in Engineering and Chemistry. Mr. LATANÉ and Mr. PRITCHETT.

SOPHOMORE PHYSICAL LABORATORY.

283. A course in advanced physical measurements accompanying the class instruction in this subject. More care, greater accuracy, and more elaborate reports are required in this course than in the Freshman laboratory. Work is designed not only to impress the truths and principles taught in the classroom, but to give some facility in the use of scientific instruments. One period. Required of Sophomores in Mechanical and Electrical Engineering and Chemistry. Mr. LATANÉ and Mr. PRITCHETT.

ELECTRICAL ENGINEERING.

IV. The Four-year Course in Electrical Engineering, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Elementary Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Mechanical Drawing, 230	2	2	2
Woodwork, 235	2	2	2
Forge-work, 236	2	2	--
Foundry, 237	--	--	2
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2
Totals	22	22	21

Sophomore Year.

Physics, 281	2	2	2
Physical Laboratory, 283	1	1	1
Descriptive Geometry, 231	2	--	--
Mechanical Drawing, 232	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
Inorganic Chemistry, 300	3	3	3
Inorganic Chemistry (laboratory), 301	2	2	2
Foundry, 237	2	--	--
Pattern-making, 238	--	2	2
American Literature, 361	3	3	3
Military Tactics, 391	1	1	1
Military Drill, 390	3	3	2
Totals	24	24	23

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Electrical Engineering, 284	3	3	3
Electrical Engineering (laboratory), 289	2	2	2
Steam Engines and Boilers, 241	2	2	2
Machine-shop Work, 239	1	1	1
Machine Design, 233	2	2	2
Mechanics, 250	2	2	2
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
English, 362, 363	3	3	3
Military Drill, 390	3	3	2
Totals	23	23	22

Senior Year.

Alternating Currents, 286	3	3	3
Electrical Applications, 287	2	2	2
Electrical Transmission, 288	--	2	2
Electrical Engineering (laboratory), 291	2	2	2
Electrical Design, 292	2	2	2
Applied Mechanics, 251	3	--	--
Mechanics of Materials, 252	--	2	2
Steam Engineering (laboratory), 249	1	1	1
Calculus, 346	3	--	--
Hydraulics, 215	--	2	2
English Literature, 364	2	2	2
Economics, 380	1	1	1
Elect one subject from the following:			
Military Drill, 390	3	3	2
Modern Languages, 370, 371, 372	3	3	3
Totals	22	22	22

ELECTRICAL ENGINEERING EQUIPMENT.

The courses in Electrical Engineering are accompanied by work in the laboratory and the designing-room. The department occupies the western portion of the basement and the first floor of Winston Hall. On the first floor are the classrooms, offices, library, drafting-room, and instrument laboratory. The classrooms are well equipped for demonstrating the principles studied in the text-books. The designing-room is suitably furnished for its purpose and the instrument laboratory is supplied with standardizing apparatus, and instruments provided for quickly determining the accuracy of all the apparatus used in actual measurements and also for advanced measurements in electricity and magnetism. This room is supplied with power, current from single, two- or three-phase sources being available, as well as direct current from the power-house or storage batteries.

In the basement are located the dynamo laboratory, the photometric laboratory, instrument room, the department's machine shop, and rooms for high-tension apparatus, storage battery, and stores.

The dynamo laboratory is a room 90 x 30 feet. Its equipment consists of direct and alternating current dynamos and motors of practically all types and ranging in size from one to thirty-seven kilowatts, the aggregate capacity being about two hundred kilowatts in machines and seventy-five kilowatts in transformers. Power is supplied to the laboratory by means of three independent circuits running from the College power-house. A full complement of ammeters, voltmeters, wattmeters, phasemeters, tachometers, rheostats, condensers, inductances, and other apparatus used in the study of electrical machines is provided. The equipment is arranged so the power is conveniently supplied to a number of independent stations, at each of which a group of students can conduct an experiment without being affected by the work of other sections.

POWER-HOUSE.

The College power-house is also available for student instruction. It is a brick building containing an excellent equipment of modern type. This consists of one seventy-five kilowatt, six-hundred volt, three-phase, revolving field alternator directly connected to a high-speed engine; two fifty kilowatt, three-hundred volt, three-phase revolving field alternators, driven by a De Laval steam turbine, with direct-driven exciter; a ten kilowatt, direct connected, direct current generator, a motor-generator exciter set; and a completely equipped switchboard.

The city of Raleigh is unusually well situated for students of Electrical Engineering. The local power company has a fine modernized steam turbine-driven plant which operates in conjunction with the water-power plant at Buck Horn Falls, on the Cape Fear River, from which point the power is transmitted at sixty thousand volts. This company also owns the large plant at Blewetts Falls, from which power is transmitted at one hundred and ten thousand volts. This line crosses the College property, and has an open-air transformer and meter station located within easy reach.

LIBRARY.

This department has a small but growing library and takes a number of the leading electrical journals, all of which are at all times available for the students' use.

SUBJECTS OF INSTRUCTION.

284. Direct Current Machinery and Apparatus.—A thorough study is made of the production and utilization of direct currents, beginning with the theory of the magnetic circuit, electromagnetic induction, electrical measurements, storage batteries, dynamos and motors, and operation and care of direct current machinery. Text-book, Franklin & Esty's *Elements of Electrical Engineering*. Three periods, through the year. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 281, 342, 343, and 344. Professor BROWNE.

285. Electrical Engineering.—An introductory course for students in other engineering departments, consisting of the study of the apparatus used in the production, distribution, and utilization of electrical power. Required of Juniors in Mechanical Engineering. Text-book, Timbie's *Elements of Electricity*. Two periods. Prerequisites, Subjects 281, 342, 343, and 344. Professor BROWNE.

286. Alternating Currents and Machinery.—A study of the flow of periodic currents in circuits containing resistance, inductance, and capacity. The construction, operation, and performance of alternating current machinery. Text-book, Franklin & Esty's *Alternating Currents*. Three periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284, 345, 346. Professor BROWNE.

287. Industrial Applications of Electricity.—A detailed study is made of the many industrial applications of electricity, including the various methods of distributing electrical energy, illumination, electric traction, the electric drive in mill and factory, electric power stations, industrial electro-chemistry and electro-metallurgy, telegraphy, and telephony. Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 289. Professor Browne and Assistant Professor McIntyre.

288. Electrical Transmission of Power.—A practical study of the problems involved in the transmission of power from the generating station to the consumer. Hydroelectric developments. High-tension transmission. Required of Seniors in Electrical Engineering. Textbook, Ferguson's *The Elements of Electrical Transmission.* Two periods throughout the second and third terms. Prerequisites, Subjects 284, 289. Professor Browne.

289. Direct Current Laboratory.—This study accompanies that of direct current machinery. It includes use of standardizing apparatus, calibration of instruments, advanced electric and magnetic measurements, and the operation and testing of direct-current dynamos and motors. Text-book, Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Juniors in Electrical Engineering. Prerequisites, Subjects 281 and 283. Assistant Professor McIntyre.

290. Electrical Engineering Laboratory.—This course accompanies Study 285. Instruction is given in the care and operation of direct and alternating current machinery. Required of Juniors in Mechanical Engineering. One period. Prerequisites, Subjects 281, 283. Assistant Professor McIntyre.

291. Advanced Dynamo Laboratory.—This study is taken up simultaneously with the study of alternating currents. It includes practice with alternating currents, measurement of inductance and capacity, experimental study of transformers, alternating current generators and motors, advanced methods of testing electrical apparatus, and shop testing. Text-book, Sever & Townsend's *Laboratory and Factory Tests.* Two periods. Required of Seniors in Electrical Engineering. Prerequisites, Subjects 284 and 289. Assistant Professor McIntyre.

292. Electrical Design.—An introductory course in the designing of electrical apparatus, taking up the design of rheostats and heating devices, controllers, and electromagnets, the design of transformers, direct and alternating current dynamos and motors. Two periods. Required of Seniors in Electrical Engineering. Prerequisite, Subject 284. Professor Browne.

COURSE IN CHEMISTRY.

In harmony with the general purposes for which the College was founded, the course in Chemistry is arranged to prepare young men for careers in that department. To this end the training given in general, organic, and analytical chemistry is supplemented by instruction in technical chemical analysis and in applied chemical subjects. The kindred scientific subjects of Biology and Physics are taught, together with the cultural studies included in the other courses.

The chemical laboratories of the North Carolina Department of Agriculture and of the North Carolina Agricultural Experiment Station afford the student an opportunity to keep in touch with the methods of research in this department of agricultural science.

The State Museum is open to the public each day, and among other things contains a very excellent collection of the State's minerals, ores, and building stones.

There are in the city of Raleigh and its vicinity several manufacturing plants to which, through the courtesy of the owners, the students in chemistry, in company with the teaching staff of this department, make visits each year. These include plants for the manufacture of illuminating gas, sulphuric acid, fertilizers, and ice; for the extraction of cotton-seed oil, and for the dyeing of cotton goods.

CHEMICAL EQUIPMENT.

The Chemical Department occupies the whole of the second floor of Winston Hall. There are two classrooms for about thirty students each and one classroom for ninety students. The classrooms are well lighted, have very convenient lecture tables and settees with arm-rests for taking notes.

The laboratory for inorganic chemistry can accommodate three hundred and thirty-six students, the laboratory for analytical chemistry ninety-six students, and for organic chemistry twenty students. A small laboratory has been set aside for special work. The laboratories are fitted up with conveniently arranged desks and hoods, each of which has the necessary water and gas connections. The balance room is located between the analytical and organic laboratories.

The department also has a dark room for photographic work, fireproof rooms for combustion, and ample stockrooms and a preparation room.

The Chemical library, containing an excellent collection of reference books and complete sets of the leading chemical journals, occupies a room convenient to the laboratories for the upper classmen.

The members of the instructing staff have offices adjacent to the laboratories.

VI. The Four-year Course in Chemistry, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Inorganic Chemistry, 300	2	2	2
Inorganic Chemistry (laboratory), 301	1	1	1
Physics, 280	4	4	4
Physical Laboratory, 282	1	1	1
Botany, Elementary, 320	3	3	--
Botany, Systematic, 321	--	--	3
Algebra, 340	5	3	--
Geometry, 341	--	2	5
Composition and Rhetoric, 360	3	3	3
Military Drill, 390	3	3	2
Totals	22	22	21

Sophomore Year.

Analytical Chemistry, Qualitative, 304	3	3	3
Physics, 281	2	2	2
Physical Laboratory, 283	1	1	1
Physiology, 328	2	--	--
Drawing, 230	--	2	2
Geometry, 342	5	--	--
Advanced Algebra, 343	--	3	--
Trigonometry, 344	--	2	5
German, 370	3	3	3
American Literature, 361	3	3	3
Military Tactics, 391	1	1	1
Military Drill, 390	3	3	2
Totals	23	23	22

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Organic Chemistry, 303	2	2	2
Organic Chemistry (laboratory), 306	3	3	3
Analytical Chemistry, Quantitative, 305	4	4	4
Bacteriology, 322	2	2	2
Soils, 331	3	3	3
German, 370	3	3	3
Advanced Rhetoric, 362	3	3	--
Public Speaking, 363	--	--	3
Military Drill, 390	3	3	2
Totals	23	23	22

Senior Year.

Inorganic Chemistry, 309	2	2	2
Organic Chemistry, 303	3	--	--
Organic Chemistry (laboratory), 306	2	--	--
Analytical Chemistry, Quantitative, 305	6	8	8
Theoretical Chemistry, 310	--	3	3
German, 370	3	3	3
Elect six periods from the following:			
English Literature, 364	2	2	2
Economics, 380	1	1	1
Military Drill, 390	3	3	2
Advanced Bacteriology, 323	3	3	3
Microchemical Analysis (laboratory), 307	2	2	2
Soils, Advanced, 332	3	--	--
Feeds, 335	--	3	--
Fertilizers, 333	--	--	3
Drawing, 230	2	2	2
Analytical Geometry, 345	5	2	--
Calculus, 346	--	3	5
Totals	22	22	22

Other subjects if approved by the Professor of Chemistry.

300. Inorganic Chemistry.—Newell's *Inorganic Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores in Engineering. Two periods. Required of Freshmen in Chemistry. Professor WITHERS, Doctor WILLIAMS, Mr. PATE, and Mr. SHERWOOD.

301. Inorganic Chemistry.—Laboratory work. Newell's *Inorganic Chemistry.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the classroom. Two periods. Required of Sophomores in Engineering. One period. Required of Freshmen in Chemistry. Mr. PATE and Mr. SHERWOOD.

302. Organic Chemistry.—Remsen's *Organic Chemistry.* The fundamental principles of organic chemistry and the more important compounds are studied. Laboratory work accompanies the lectures and recitations. Two periods. Required of Juniors in Chemistry. Dr. RAY.

303. Organic Chemistry.—A continuation of 302. Three periods, first term. Required of Seniors in Chemistry. Professor WITHERS.

304. Analytical Chemistry.—W. A. Noyes' *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common elements in unknown substances. Three periods. Required of Sophomores in Chemistry. Doctor WILLIAMS.

305. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of agricultural and technical importance. Four periods. Required of Juniors in Chemistry. Six periods. Required of Seniors in Chemistry. Doctor WILLIAMS.

306. Organic Chemistry.—Laboratory work. Orndoff's *Laboratory Manual.* The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. Three periods. Required of Juniors in Chemistry. Two periods, first term. Required of Seniors in Chemistry. Doctor RAY.

307. Microchemical Analysis.—Laboratory practice in microchemical analysis, teaching the student the application of microchemical methods in systematic chemical analysis and the tests for the common elements. Rapid qualitative analysis of inorganic compounds, alloys, etc. Two periods a week. Elective for Seniors in Chemistry. Doctor RAY.

309. Advanced Inorganic Chemistry.—Lectures and recitations. Two periods. Required of Seniors in Chemistry. Doctor Williams.

310. Theoretical Chemistry.—Three periods, second and third terms. Required of Seniors in Chemistry. Professor Withers.

BOTANY AND BACTERIOLOGY.

320. Elementary Botany.—Weekly lectures, accompanied by laboratory work and reference reading regarding the algæ, fungi, ferns, and seed plants. Morphology is emphasized, and the broad principles of nutrition, reproduction, growth, sex, adaptation, and evolution are illustrated. Particular consideration is given to the fungi. The student's knowledge is made his own through field work and simple independent investigations. Three periods, first and second terms. Required of Freshmen in Chemistry. Professor Fulton.

321. Systematic Botany.—The student becomes acquainted with the principal orders and families of plants of North Carolina, as well as with the general problems of plant classification. Attention is given to the grouping of plants into societies and to the study of plant variation and adaptation. Three periods, third term. Required of Freshmen in Chemistry. Mr. Norton.

322. Bacteriology.—Lectures and laboratory work on the physiology, morphology, and economy of bacteria, with especial reference to home sanitation and disinfection, and to the relation of bacteria to disease in plants and animals. The student becomes familiar in the laboratory with methods of culture and investigation in bacteriology. Two periods. Required of Juniors in Chemistry. Professor Fulton and Mr. Norton.

323. Bacteriology (Advanced).—A course designed to perfect the technique in bacteriology for those who desire to do original work in bacteriology. Work may be elected in sewage bacteriology, dairy bacteriology, bacterial plant diseases, bacteriology of manure, water, soil, or air. The course is flexible and will be made to fit the requirements of those students electing it. Three periods. For Seniors in Chemistry. Professor Fulton and Mr. Norton.

SOILS.

331. Soils.—Attention is given to the forces that decompose and disintegrate rock and to the influence of these forces and of the various kinds of rock on the resulting soil. The physical characters, such as water-holding capacity, capillarity, drainage, effect of mulches, temperature and weight, and the modification of these characters by tillage, cropping, and all operations of practical soil management, are discussed and exemplified in the classroom, laboratory, and field. Some attention is given to the classification of soils in the United States and especially in North Carolina. The physical, chemical, and bacteriological soil conditions are discussed in relation to each other and to their effects on soil fertility. Systems of maintaining the permanent productiveness of soils are studied. Three periods throughout the year. Required of Juniors. Prerequisite, Chemistry 300 and Physics 280. Associate Professor SHERWIN.

332. Advanced Soils.—In this course the student will be guided in the study of any line of Soils work he may choose, either along practical or scientific lines. Laboratory work will be given. Considerable reference will be made to Experiment Station literature with the aim of acquainting the student with the literature on the subject and with the methods of investigation used. Three periods, first term. Prerequisite, Soils 331. Elective for Seniors in Chemistry. Associate Professor SHERWIN.

333. Fertilizers.—Sources, composition, availability and value of various commercial and farm fertilizers. Comparative value of the element of plant food in different carriers as shown by their productive capacity. Fertilization of all the principal crops of the State and of any special crops in which the class is interested will be discussed, considering amount, method, and time of application as well as the most economical formula to use. Two periods, third term. Elective for Seniors in Chemistry. Prerequisite, Soils 331. Associate Professor SHERWIN.

STOCK FEEDING.

335. Stock Feeding.—A study of the compositions of feeds, and the food requirements of the domestic animals. The student will be required to become familiar with the fundamental principles, so that he can compound suitable rations for the different classes of live stock. Special emphasis will be laid upon practical problems in feeding. Three periods a week, second term. Elective for Seniors in Chemistry. Professor McNUTT.

MATHEMATICS.

While the subject of mathematics is presented in such a manner that the student obtains a thorough working knowledge of those principles which he needs in his Engineering Course, yet it is not the purpose to subordinate the general theory of Mathematics to the practical side. The work consists of recitations, written exercises, and lectures, with frequent oral and written quizzes.

340. Algebra.—Wells' *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutations, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term; or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent on the work of the first term. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

341. Plane Geometry.—Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

342. Solid Geometry.—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first term Freshman mathematics and 341. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

343. Advanced Algebra.—Wells' *New Higher Algebra.* The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite, 340 and 341. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

344. Trigonometry.—Wells' *Plane and Spherical Trigonometry.* Plane Trigonometry. Definitions of the trigonometric functions; derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 340 and 341. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

345. Analytical Geometry.—Nichols' *Analytical Geometry.* Loci of equations, straight line, circle, parabola, ellipse, hyperbola, a discussion of the general equation of the second degree, higher plane curves, and geometry of three dimensions. Five periods, first term; two periods, second term. Required of Juniors in Engineering. Prerequisite, 342, 343, and 344. Professor YATES.

346. Differential and Integral Calculus.—Osborne's *Elements of Calculus.* A thorough treatment of the fundamental principles and derivation of formulæ; applications to various problems, such as expansion into series, evaluation of indeterminate forms, maxima and minima, radius of curvature, lengths of curves, areas, volumes, etc. Three periods, second term; five periods, third term. Required of Juniors. Three periods, first term. Required of Seniors. Prerequisite: For differential calculus, 342, 343, and 344; for integral calculus, differential calculus and 345. Professor YATES.

ENGLISH.

360. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of Freshmen. Professor HARRELSON, Doctor SUMMEY, Mr. PECKHAM.

361. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRELSON, Doctor SUMMEY, Mr. PECKHAM.

362. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

363. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-books and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Three periods, third term. Required of Juniors. Professor HARRISON.

364. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Two periods. Elective for Seniors. Professor HARRISON.

ECONOMICS.

380. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. Required of Seniors. One period. Dr. SUMMEY.

MODERN LANGUAGES.

The aim of the department is to enable one (*a*) to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and (*b*) to read scientific works and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories, and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English.

The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions and gradually progressing to more advanced ones, by frequent repetitions, and by a strict adherence to the rule that answers be always given in complete short sentences of the foreign language and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lesson are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week. The work is optional, but credit towards a degree is allowed for the successful completion of the work.

The languages regularly taught are German for students of Chemistry and Mechanical Engineering, and Spanish for Civil and Electrical Engineering students.

370. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; and a scientific reader. Three periods. Elective for Juniors or Seniors. Doctor Rudy.

371. French.—Worman's *Modern Languages*, First and Second French books; Worman's *Grammaire Française;* selected short stories from French literature, and scientific readers. This subject may be taken by special petition to the Faculty. Doctor Rudy.

372. Spanish.—Worman's *Modern Languages*. First and Second Spanish books; *Introduccion a la Lengua Castellana*, by Marion y Des Garrenes; a Spanish grammar to be selected; Fontaine's *Flores de Espana*, and other short stories of Spanish literature; *Modelos para Cartas*. Elective for Juniors and Seniors in Civil and Electrical Engineering. Doctor Rudy.

MILITARY SCIENCE.

150. Drill.—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier, squad, company, and battalion; ceremonies including inspection, parade, review, and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Required of all classes except Seniors. Seniors may take either the drill or three extra hours in some other subject instead. Captain Peace and Cadet Officers of the Battalion.

151. Tactics.—Theoretical instructions in infantry drill regulations, field-service regulations, manual for guard duty, and small-arms firing manual. One hour each week. Required of Sophomores. Captain Peace.

TEXTILE COURSES.

VIII. The Four-year Course in Textile Industry.

THE TEXTILE DEPARTMENT.

The Textile Department, which is a typical cotton mill, is fully equipped with all the necessary machinery for instruction in manufacturing cotton yarns and fabrics from the bale to the finished product. The student is taught the theory of cotton spinning, weaving, designing, and dyeing. In connection with the theory, he learns the practical operation of cotton machinery used in carrying on the different processes. Further, he learns such essential practical details as enable him to adjust and fix the machinery so as to produce the proper results. As a result of this training, each student produces for himself cotton yarns of different numbers, and cotton fabrics of different kinds, from his own designs and choice of colors.

TEXTILE INSTRUCTION.

In this department two courses of instruction are offered, the four-year course, leading to the degree of Bachelor of Engineering, and the two-year course in carding and spinning, weaving, designing, and dyeing.

Four-year Course.

The four-year course offers complete facilities for full instruction in all branches of cotton-mill work. Practical training in textile work begins in the Freshman year and forms a part of the work in each of the following years. The combination of practical with theoretical training is begun in the Sophomore year and continues in the Junior and Senior years. The theoretical work is directly related to the practical work going on, and this combination offers the best means for studying cotton-mill work and its operations.

Two-year Course.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving special instruction in textile work.

TEXTILE BUILDING AND EQUIPMENT.

The Textile Building is located on the west campus. It is a two-story brick building one hundred and twenty-five by seventy-five feet, with a basement. Throughout, its construction is similar to that of a cotton mill, being an illustration of standard construction in this class of buildings. The basement is fitted up with a laboratory and classroom for instruction in dyeing and with dyeing machinery. On the first floor are located the hand and power looms and the necessary warp-preparation machinery. The carding and spinning machinery is located on the second floor. Electricity is used as motive power, the machinery of each department in the building being driven by a separate motor. The machinery equipment consists of the latest types of cotton-mill machinery manufactured by American builders. The following is a list of the machines and their makers:

Carding Department.

Opening Room.—One cotton gin, made by Continental Gin Company, Birmingham, Ala. One thread extractor, made by Kitson Machine Company, Lowell, Mass. One combination opener and breaker lapper, made by Kitson Machine Company, Lowell, Mass. One 40-inch single beater finisher lapper, with patent carding beater, made by Kitson Machine Company, Lowell, Mass.

Carding Room.—One 40-inch revolving flat card, 112 flats, with coiler, made by Mason Machine Works, Taunton, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Whitin Machine Works, Whitinsville, Mass. One 40-inch revolving flat card, 110 flats, with coiler, made by Saco & Pettee Machine Shops, Newton Upper Falls, Mass. One single railway head, with coiler, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One drawing frame, four deliveries, leather rolls, made by Whitin Machine Works, Whitinsville, Mass. One railway head, with coiler, metallic rolls, and improved evener motion, made by Saco & Pettee Machine Shops, Newton Upper Falls, Mass. One drawing frame, four deliveries, metallic rolls, made by Saco & Pettee Machine Shops, Newton Upper Falls, Mass. One sliver lap machine, one ribbon lap machine, and one six-head combing machine, made by Whitin Machine Works, Whitinsville, Mass. One 36-spindle slubber for 11 x 5½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press Company, Woonsocket, R. I. One 48-spindle intermediate roving frame for 9 x 4½-inch bobbin, made by Saco & Pettee Machine Shops, Biddeford, Me. One 64-spindle fine roving frame for 7 x 3½-inch bobbin, with ball-bearing top rolls, made by Woonsocket Machine and Press

Company, Woonsocket. R. I. One 80-spindle jack roving frame for 6 x 2½-inch bobbin, with ball-bearing top rolls. made by Woonsocket Machine and Press Company. Woonsocket, R. I.

Spinning Department.

Spinning Room.—One 64-spindle spinning frame for warp; one 80-spindle spinning frame for filling. made by Whitin Machine Works, Whitinsville, Mass. One 80-spindle spinning frame for warp. one 80-spindle spinning frame for filling, made by Mason Machine Works, Taunton, Mass. One 80-spindle spinning frame for warp, one 80-spindle spinning frame for filling. made by Fales & Jenks Machine Company, Pawtucket. R. I. One 64-spindle spinning frame for warp, one 64-spindle spinning frame for filling. made by Saco & Pettee Machine Shops, Biddeford. Me. One 48-spindle spinning frame, combination build. made by D. A. Tompkins Company, Charlotte, N. C. One 240-spindle mule spinning frame, 1½-inch gauge, made by Asa Lees & Co.. Oldham. England.

Spooling, Twisting, and Winding.—One 40-spindle spooler. made by Draper Company, Hopedale, Mass. One 40-spindle spooler, made by Whitin Machine Works. Whitinsville. Mass. One 32-spindle spooler. made by Easton & Burnham. Pawtucket. R. I. One 40-spindle spooler. made by D. A. Tompkins Company. Charlotte. N. C. One 48-spindle twister. made by Whitin Machine Works, Whitinsville. Mass. One 100-spindle wet twister. made by Draper Company. Hopedale, Mass. One 48-spindle twister, one-half for wet. one-half for dry twisting. made by Fales & Jenks Machine Company. Pawtucket, R. I. One 50-spindle reel. one-half live, one-half dead spindles. made by D. A. Tompkins Company. Charlotte. N. C. One 40-spindle reel. made by Draper Company. Hopedale, Mass. One 6-spindle universal winding machine. made by Universal Winding Company. Boston. Mass. One section warper. 400 ends. made by Draper Company. Hopedale. Mass.

Weaving Department.

Warp Preparation.—One 12-spindle bobbin-winding machine, made by Jacob K. Altemus, Philadelphia, Pa. One 4-spindle bobbin winding machine. made by Universal Winding Company. Boston, Mass. One beaming machine. made by Lewiston Machine Company, Lewiston. Me. One beaming machine. complete. made by the T. C. Entwistle Company, Lowell. Mass.

Looms.—One Northrop-Draper print-cloth loom; two Northrop-Draper sateen looms; one Northrop-Draper loom with 20-harness dobby, made by Draper Company, Hopedale, Mass. Three high-speed sheeting looms, made by Kilburn, Lincoln & Co., Fall River, Mass. One sheeting loom, one 12-harness dobby loom, one 24-harness dobby loom, one 4 x 1 gingham loom, made by Whitin Machine Works, Whitinsville, Mass. One print-cloth loom, one 2 x 1 box loom, one 24-harness dobby loom, made by Mason Machine Works, Taunton, Mass. One 4-harness twill loom, made by Lowell Machine Shop, Lowell, Mass. One Crompton 4 x 1 box gingham loom, one Crompton 4 x 1 box loom with 20-harness dobby; one Crompton 2 x 1 box loom with 400-hook Jacquard machine; one Knowles Gem loom with 4 x 4 box; one Stafford single-box loom with 20-harness dobby, made by Crompton & Knowles Loom Works, Worcester, Mass. One single-box loom with 200-hook table-napkin Jacquard machine; one 4 x 1 box table-cover loom with 624-hook Halton Jacquard machine, made by Crompton-Thayer Loom Company, Worcester, Mass. One Whitin loom with 624-hook Halton Jacquard for crochet quilts; one 5-cylinder, 200-hook Jacquard, made by Schaum & Uhlinger, Philadelphia; ten 4 x 4 box hand looms with 30-harness witchheads for narrow fabrics; two 4 x 4 box hand looms with 400-hook and 600-hook Jacquard machines, from Thomas Halton's Sons, Philadelphia.

Knitting.—One full automatic knitting machine, made by George D. Mayo Machine Company, Laconia, N. H. One combination ribber and footer, one ribber made by Scott & Williams, Philadelphia. One "Banner" knitting machine, made by Hemphill Manufacturing Company, Pawtucket, R. I. One ribber, made by Wildman Manufacturing Company, Norristown, Pa. One looper, made by Beattie Manufacturing Company, Cohoes, N. Y. One looper, made by Grosser Machine Company, New York.

Dyeing Department.

The Dyeing Department is located in the basement of the Textile Building, and consists of an experimental dyeing laboratory with desk room sufficient for thirty students, a lecture-room, a stock-room, an office, and a room seventy by fifty feet which is fitted up to give instruction in practical dye-house work.

The dyeing laboratory is well fitted up with appropriate work tables and all the necessary apparatus for experimental dyeing, dye-testing, color-matching, and the testing of dyed samples to light, acids, alkalis, etc., as well as for carrying out the various chemical operations necessary in dyeing. The dye-house is equipped with the proper dyeing machinery needed in the dyeing of large quantities of material, and the giving of practical instruction in boiling out, bleaching, and dyeing of raw stock, cops, skeins, warps, and piece goods.

The department has a large collection of dye-stuffs and color cards. Through the kindness of the various dyestuff dealers and manufacturers the department is regularly supplied with all new dyestuffs and color cards as soon as they are put on the market, thus affording the student ample opportunity to become familiar with the latest methods and products for commercial work. The department is indebted to the following firms for donations of dyestuffs and chemicals:

H. A. Metz & Co., New York.
Badische Company, New York.
Farbenfabriken of Elberfeld Company, New York.
Danker & Marston, Boston, Mass.
American Dyewood Company, New York.
Berlin Aniline Works, New York.
Casella & Co., New York.
Bosson & Lane, Boston.
Kallé & Co., New York.
Geisenheimer & Co., New York.

Dye-house Equipment.—Seven dye vats; one Roessler & Hasslacher bleaching vat; one Jefferson high-pressure boiling-out kier; one hand-dyeing jigger; one 10-gallon steam-jacketed copper kettle; one steam aging box; one Fairmount warp dyeing machine; one Textile Finishing Company's warp dyeing machine; one Textile Finishing Company's warp sizing machine; one 5-can upright dryer; one small Lightfoot raw stock dyeing machine; one Tolhurst Machine Works hydro-extractor; one Schaum & Uhlinger hydro-extractor; one Mather & Platt cloth printing machine; one Fries warp dyeing machine.

A full equipment of analytical balances and other necessary apparatus for experimental work.

Power and Power Transmission.

One 30-horse power 3-phase 550-volt motor, made by General Electric Company, for driving carding and spinning machinery.

One 15-horse-power 3-phase 550-volt motor, made by General Electric Company, for driving weaving machinery.

One 10-horse-power 3-phase 550-volt motor, made by Fairbanks-Morse Company, for driving dyeing machinery.

Pulleys, shaftings, hangers, and couplings, made by Jones & Laughlin Company, Ltd., Pittsburg, Pa.

Belting, made by Fayerweather & Ladew, New York City, and Maloney-Bennett Belting Company, Chicago, Ill.

VIII. The Four-year Course in Textile Industry, leading to the degree of Bachelor of Engineering.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.*		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400†	1	1	1
Weaving, 401	2	2	2
Mechanical Drawing, 430	2	2	2
Woodwork, 431	2	2	2
Forge-work, 432	2	2	--
Foundry, 433	--	--	2
Algebra, 441	5	3	--
Geometry, 442	--	2	5
Elementary Physics, 440	2	2	2
Composition and Rhetoric, 450	3	3	3
Military Drill, 480	3	3	2
Totals	22	22	21

Sophomore Year.

Carding and Spinning, 400	2	2	2
Weaving, 401	2	2	2
Textile Designing, 402	2	1	1
Cloth Analysis, 403	--	1	1
Inorganic Chemistry, 420	3	3	3
Inorganic Chemistry (laboratory), 421	2	2	2
Geometry, 443	5	--	--
Advanced Algebra, 444	--	3	--
Trigonometry, 445	--	2	5
American Literature, 451	3	3	3
Military Drill, 480	3	3	2
Military Tactics, 481	1	1	1
Totals	23	23	22

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*The lecture and recitation periods are one hour; the laboratory, shop, and other practice periods, two hours.

†The figures immediately following the name of the study are given to aid one in finding readily a description of the subject. Under each department a number precedes the description of the study.

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	4	4	4
Weaving, 401	3	3	3
Textile Designing, 402	3	2	2
Cloth Analysis, 403	--	1	1
Dyeing, 410	2	2	2
Dyeing (laboratory), 411	3	3	3
Steam Engines and Boilers, 435	2	2	2
English, 452, 453	3	3	3
Military Drill, 480	3	3	2
Totals	23	23	22

Senior Year.

Carding and Spinning, 400	4	4	4
Weaving, 401	4	4	4
Textile Designing, 402	3	3	3
Cloth Analysis, 403	1	1	1
Dyeing, 410	1	1	1
Dyeing (laboratory), 411	3	3	3
Mill Accounting and Mill Costs, 404	1	1	1
Machine-shop Work, 434	2	2	2
Elect three periods from the following:			
English Literature, 454	2	2	2
Economics, 455	1	1	1
Military Drill, 480	3	3	2
Modern Languages, 460, 461	3	3	3
Totals	22	22	22

DESCRIPTION OF SUBJECTS.

400. Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant, its growth, varieties, ginning, baling and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers: cards; sliver lap machines; ribbon lap machines; combers; railway-heads: drawing-frames; slubbers: intermediate; speeders: jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts. speed of parts. production. Producing yarns of different counts. single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations,* by Tompkins: *Cotton Spinning.* by Nasmith. Required of Freshmen. Sophomores. Juniors, and Seniors. Assistant Professor PARKER.

401. Weaving.—Lectures and practice in warp preparation, operating and fixing looms, cloth-finishing machinery. Warp preparation: pin frame warper; section warper; beam warper; construction of beam warper. stop motion. measuring motion. creel; pattern warp making; long and short chain beamers. Slashing: steam cylinder slasher; hot-air slasher; construction of slasher. creel. cylinder, immersion roll, squeeze rolls. drying fan. separator rolls, winding yarn on beam, cone drive. slow motion, measuring and cut marking motion. Sizing: construction of size kettle; size mixing and boiling; division of sizing ingredients; value of ingredients; sizing recipes for light. medium, and heavy sizing. Loom-mounting: reeds and harnesses: drawing in, and putting warps in loom. Looms: hand looms and power looms. construction of plain loom. principal movements in weaving. let-off and take-up motions, filling stop motion. warp stop motion. Cams and their construction. Magazine looms. construction and advantages. Drop box looms: chain building for box looms. changing boxes to have easy-running looms. construction and value of multipliers. timing and fixing box motions. Pick and pick-looms. Box-chain and multiplier-chain building. arrangement of colors in boxes to give easy-running loom. Ball and shoe-pick motion. Construction and fixing of head motion. Dobby. single and double index; construction and fixing of dobby: extra appliances necessary for weaving leno. towel, and other pile fabrics. Value of easers; half motion; and jumper attachment for leno. Springs and spring-boxes. Pattern chain building. Jacquard: single and double lift; construction and tie-up. Weave-room calculations, speed and production calculations, relative speed of looms, counts of cotton harness. Finishing: inspection of cloth; singeing and brushing; calendering. tentering; folding and packing for the market. Equipment necessary for warp preparation, weaving. finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving. Plain and Fancy,* by Nelson. Required of Freshmen, Sophomores. Juniors. and

Seniors in the Four-year Course and of first and second year students in the Short Course. Professor NELSON and Mr. STEED.

402. Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves: plain, twill, satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves, plain and fancy basket weaves, warp and filling rib weaves. Broken twills, curved twills, corkscrew twills, entwining twills. Granite weaves, satin shading. Combination of weaves; figured weaving on plain ground. Satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno, honeycomb weaves. Bedford cords and combination with other weaves. Wave designs, pointed twills, diamond effects. Plain and fancy piqués. Double plain, figured double plain. Double cloths. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp; cloths ornamented with extra filling. Cotton velvet. Corduroy. Matelasse. Leno weaves with one, two, and more sets of doups. Principles of working both top and bottom doups. Combination of plain and fancy weaves with leno. Methods of obtaining leno patterns. Jacquards. Distribution and setting out of figures for geometrical and floral effects. Distributing figures to prevent lines. Areas of patterns. Preparation of sketches. Transfer of sketches to design paper. Painting in the design with different weaves according to sketch. Shading of patterns. Card cutting and lacing. Required of Sophomores, Juniors, and Seniors. Professor NELSON and Mr. STEED.

403. Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp: also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of Sophomores, Juniors, Seniors. Professor NELSON and Mr. STEED.

404. Mill Accounting and Cost Finding.—The general fundamental principles of the various systems of cost-finding as applicable to the different classes of manufactured products are carefully explained, as well as questions of commissions, discounts, depreciation, inventories, distribution of expenses, etc. As a clear understanding of accounting is necessary for intelligent cost-finding, the method of keeping accounts is studied in detail. The general idea is to impress on the student the relative cost of production for any class of manufactured product and to show how the different processes of manufacturing influence cost. One period, first, second, and third terms. Required of Seniors. Mr. HALSTEAD.

DYEING COURSE.

As the textile industries of the State increase, the need of young men who have been trained in the principles as well as the practice of the different factory operations becomes apparent. In the course in dyeing the student is taught the different practical methods of the dye-house; the chemistry of the dyestuffs, some of each class of which he actually makes; the chemical changes brought about by mordants, assistants, etc. He also learns color matching, dye testing, and the methods for the analysis of the different chemicals used in the dye-house. He carries on the study of carding, spinning, weaving, designing, cloth analysis, etc., to the end of the Sophomore year, with the other textile students, and with them devotes attention to shop-work, drawing, engines, boilers, etc., together with the general studies of English, History, Mathematics, Physics, and General Chemistry, which are required in all the Four-year Courses.

VII. The Four-year Course in Dyeing, leading to the degree of Bachelor of Science.

Freshman Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning, 400	1	1	1
Weaving, 401	2	2	2
Mechanical Drawing, 430	2	2	2
Woodwork, 431	2	2	2
Forge-work, 432	2	2	--
Foundry, 433	--	--	2
Algebra, 441	5	3	--
Geometry, 442	--	2	5
Elementary Physics, 440	2	2	2
Composition and Rhetoric, 450	3	3	3
Military Drill, 480	3	3	2
Totals	22	22	21

Sophomore Year.

Carding and Spinning, 400	2	2	2
Weaving, 401	2	2	2
Textile Designing, 402	2	1	1
Cloth Analysis, 403	--	1	1
Inorganic Chemistry, 420	3	3	3
Inorganic Chemistry (laboratory), 421	2	2	2
Geometry, 443	5	--	--
Advanced Algebra, 444	--	3	--
Trigonometry, 445	--	2	5
American Literature, 451	3	3	3
Military Drill, 480	3	3	2
Military Tactics, 481	1	1	1
Totals	23	23	22

Junior Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Dyeing, 410	2	2	2
Dyeing (laboratory), 411	5	3	3
Organic Chemistry, 422	2	2	2
Analytical Chemistry, 424, 425	5	7	7
English, 452, 453	3	3	3
Military Drill, 480	3	3	2
German, 460	3	3	3
Totals	23	23	22

Senior Year.

SUBJECTS.	1st Term.	2d Term.	3d Term.
Dyeing, 410	3	3	3
Dyeing (laboratory), 411	2	2	2
Organic Chemistry, 423	2	2	2
Analytical Chemistry, 425	6	6	6
Organic Chemistry (laboratory), 426	3	3	3
Elect six periods from the following:			
English Literature, 454	2	2	2
Economics, 455	1	1	1
Military Drill, 480	3	3	2
German, 460	3	3	3
Totals	22	22	22

DESCRIPTION OF SUBJECTS.

410. Dyeing.—With the microscope and other testing apparatus the student makes a careful study of the various fibers used in the textile industry. He also studies the chemical and physical properties of these fibers, and the action of acids. alkalis, heat, moisture, and the various other agencies to which fibers are liable to be subjected. He next takes up the study of the fundamental principles which underlie the arts of bleaching and dyeing. such as the boiling out and bleaching of cotton, and the chemical reactions involving each step; the adaptability of water for bleaching and dyeing, followed by the theories of dyeing; substantive dyestuffs and their application to cotton; after-treatment of direct dyestuffs, including diazotising and developing and the topping with basic dyestuffs; the application to cotton of basic dyestuffs, acid dyestuffs, mordant dyestuffs, including a study of the various mordants and their fixation with metallic salts; dyeing with sulphur dyestuffs, indanthrenes, indigo, natural and artificial, aniline black, turkey red, and the insoluble azo colors developed on the fiber; the methods of bleaching and dyeing of linen, jute, ramie, and other vegetable fibers; the scouring and bleaching of wool; the carbonization and chlorination of wool; the application of basic, acid, chrome, eosin, and direct colors to wool; dyeing wool with logwood, fustic, and other natural dyewoods; methods of the making and dyeing of artificial silk; the boiling off, bleaching and dyeing of natural silk; study of the chemical and physical changes which take place during mercerization; also the methods of dyeing mercerized goods; the use of the various kinds of machines used in bleaching and dyeing; the dyeing of raw-stock, skeins, cops, warps, piece goods, hosiery, underwear, and unions; the science of color-mixing; color-matching on textiles; the use of the tintometer and colorimeter; calico printing, including the various methods of preparing the various pastes, thickening agents, mordants and assistants used in printing; quantitative analysis of mixed yarns, and fabrics composed of cotton, wool, and silk; the testing of dyestuffs for their shade, tinctorial power, and leveling properties; comparative dye trials to determine money value; testing for mixtures; the reactions of acids, alkalis, and reducing agents on several samples taken from the different classes of dyestuffs.

The course of lectures, as outlined above, will include the consideration of many difficult problems that arise in the dye-house, with especial reference to the dyeing, mercerizing, and finishing of cotton yarns and pieces. Required of Juniors and Seniors in Textile Industry. Mr. Halstead.

411. Dyeing Laboratory.—A series of experiments is performed which covers all the subjects taken up in the lecture course, and includes a large amount of work done in the laboratory and dye-house. Special stress is put on the matching of colors and the dyeing of sulphur and indanthrene dyestuffs. Each student is required to bleach and dye a large number of samples of yarn and cloth on a small scale, and is required to mount specimens of his work in a pattern book. At the discretion of the instructor in charge, the class bleaches and dyes larger quantities of raw-stock, cloth, and yarn in the dye-house, as well as prints samples on the laboratory printing machine. This work will be supplemented by visits to the mills which do dyeing in the city of Raleigh. Required of Juniors and Seniors in Textile Industry. Mr. Halstead.

CHEMISTRY.*

420. Inorganic Chemistry.—Newell's *Inorganic Chemistry.* The common elements and their principal compounds are studied, together with some of the fundamental principles of the science. The lectures are illustrated by experiments and the exhibition of specimens. Three periods. Required of Sophomores. Professor WITHERS, Doctor WILLIAMS, and Mr. PATE.

421. Inorganic Chemistry.—Laboratory work. Newell's *Inorganic Chemistry.* The student performs under the eye of the instructor experiments designed to illustrate and emphasize the work of the classroom. The latter part of the year is devoted to an introductory course in qualitative analysis. Two periods. Required of Sophomores. Mr. PATE and Mr. SHERWOOD.

422. Organic Chemistry.—Remsen's *Introduction to the Study of the Compounds of Carbon.* The fundamental principles of organic chemistry and the more important compounds are studied through the aliphatic series. Two periods. Required of Juniors in Dyeing. Doctor RAY.

423. Organic Chemistry.—A continuation of 422, beginning with the aromatic series. Two periods. Required of Seniors in Dyeing. Professor WITHERS.

424. Analytical Chemistry.—W. A. Noyes' *Qualitative Analysis.* A discussion of the principles involved in chemical analysis, together with laboratory work. The student is taught to detect the presence of the common metallic elements, as well as that of the acids, in unknown substances. Four periods, first term. Required of Juniors in Dyeing. Doctor WILLIAMS.*

425. Analytical Chemistry.—Treadwell's *Quantitative Analysis.* Gravimetric and volumetric analysis, special attention being given to the analysis of substances of technical importance. Seven periods, second and third terms. Required of Juniors in Dyeing. Six periods. Required of Seniors in Dyeing. Doctor WILLIAMS.*

426. Organic Chemistry.—Laboratory work. Orndorff's *Laboratory Manual.* The typical transformations and syntheses of the aliphatic and aromatic groups are taken up. The student thus becomes familiar with the reactions and properties of the more important organic compounds. One of each of the more important classes of dyestuffs is prepared and the properties studied. Three periods. Required of Seniors in Dyeing. Doctor RAY.

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* For further information see course in Chemistry.

MECHANICAL ENGINEERING.*

430. Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine; elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of Freshmen. Mr. COBURN.

431. Woodwork.—Use of bench tools; working from drawings, lining, sawing, planing; practice in making simple exercises in woodturning. Two periods. Required of Freshmen. Mr. CLAY.

432. Forge Work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods, first and second terms. Required of Freshmen. Mr. WHEELER.

433. Foundry.—Recitations and exercises in foundry work, including moulding, core-making, the management of the cupola furnace and the crucible furnace in iron and brass melting. Two periods. Required of Freshmen, third term. Mr. WHEELER.

434. Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of Textile Seniors. Mr. PARK.

435. Steam Engines and Boilers.—A study of the structural details of modern steam engines; the slide valve, both in its simple form and when used in combination with independent cut-off valves; link motion and other reversing gears; and the Zeuner diagram. Attention is given to the effect of the reciprocating parts and to inertia and tangential pressures; the class also studies the steam-engine indicator, indicator rigging, and steam distribution as disclosed by the indicator.

The various forms of steam boilers are studied, and the methods employed in their construction are noted. The following subjects are studied in detail: number and size of tubes and flues, the thickness of plates, strength of different styles of riveting, kinds of bracing, amount of grate and heating surface, different kinds of steam and water gauges, safety valves and injectors; the causes and methods of preventing foaming, incrustation, and corrosion; the manner of setting boilers, and of operating them with safety and economy; feed-water heaters; mechanical stokers; smoke-consumers and chimneys. Two periods. Required of Juniors in Textile Industry. Mr. VAUGHAN.

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* For further information see course in Mechanical Engineering.

PHYSICS.*

In this course special stress is laid upon the subjects of mechanics, liquids, gases, and heat. It includes the study of the fundamental units, British and metric standard measures, definitions of force, work and power, laws of motions, principles of machines, mechanics of fluids, gases, and heat, and brief introductions to the study of sound and light. Two periods. Required of Freshmen. Mr. LATANÉ.

MATHEMATICS.

441. **Algebra.**—Wells' *New Higher Algebra.* Begin with quadratic equations and complete summation of series, embracing ratio and proportion, variation, the progressions, the binomial theorem, undetermined coefficients, logarithms, compound interest and annuities, permutation, combinations, and continued fractions. At the beginning of the term a review is usually given on involution, evolution, theory of exponents, and radicals. Five periods, first term; three periods, second term. Required of Freshmen. Prerequisite: For first term, entrance requirements; for second term, the work of the first term, or, in case of failure, a term standing of 60 per cent or more, and a final examination grade of at least 40 per cent, on the work of the first term. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

442. **Plane Geometry.**—Wentworth's *Plane and Solid Geometry.* A complete course in Plane Geometry, including numerous original exercises. Two periods, second term; five periods, third term. Required of Freshmen. Prerequisite, entrance requirements. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

443. **Solid Geometry.**—A thorough course in Solid Geometry, with more than two hundred original exercises. Also, the application of Plane Geometry to conic sections. Required of Sophomores. Five periods, first term. Prerequisite, first-term Freshman mathematics and 442. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

444. **Advanced Algebra.**—Wells' *New Higher Algebra.* The general theory of equations, the solution of higher equations, determinants, etc. Required of Sophomores. Three periods, second term. Prerequisite, 441 and 442. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

445. **Trigonometry.**—Wells' *Plane and Spherical Trigonometry.* Plane Trigonometry. Definitions of the trigonometric functions;

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* For further information see course in Electrical Engineering.

derivation of formulæ, with their application. Solution of plane triangles, etc. Spherical Trigonometry. Solution of spherical triangles. This course includes the solution of many practical problems. Required of Sophomores. Two periods, second term; five periods, third term. Prerequisite, 441 and 442. Professor YATES, Mr. HARRELSON, Mr. ANGEL, and Mr. TUCKER.

ENGLISH.

450. Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

451. American Literature.—The study of the history of American literature is accompanied with the reading and analysis in class and as parallel of the writings of representative American authors. Essays are based largely upon the class reading. Three periods. Required of Sophomores. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

452. Advanced Rhetoric.—The principles of style and the forms of discourse constitute the basis of the work. Illustrative prose is studied in class, and in frequent essays and themes the students put into practice the principles learned. Three periods, first and second terms. Required of Juniors. Professor HARRISON.

453. Public Speaking.—The principles governing the preparation and the delivery of public addresses are given in text-book and in lectures. The reading in class of addresses in various styles, the writing of several papers by each member of the class, and practice in delivery, complete the work. Three periods, third term. Required of Juniors. Professor HARRISON.

454. English Literature.—The inductive study of the development of English poetry and prose is pursued in the works of standard writers of the different periods. The continuity is emphasized by a text-book on the history of the literature. Occasional essays and parallel reading form an important part of the work. The purpose of the course is to cultivate in the student a taste for the best writings of the greatest writers. Two periods. Elective for Seniors. Professor HARRISON.

ECONOMICS.

455. This course deals with public problems relating to the production, distribution, and exchange of wealth. The leading topics discussed are capital, wages, money, transportation, and taxation. Instruction is given by lectures and text-books. One period. Open to Seniors. Doctor SUMMEY.

MODERN LANGUAGES.

The aim of the department is to enable one to use a limited vocabulary for practical purposes in speaking and writing fluently simple sentences without idiomatic expressions or difficult constructions, and to read scientific works, and to know the meaning of difficult constructions and idiomatic expressions of the foreign language.

A unilingual method is used, based on conversation, humoristic anecdotes, interesting short stories and scientific articles. The student is taught to think in the foreign language by a direct association of thoughts with foreign expressions without the medium of English. The meaning and fluent use of foreign expressions are taught by a direct appeal to real objects, gestures, pictorial illustrations, cognates, context, comparisons, contrasts, and associations, beginning with leading simple questions, and gradually progressing to more advanced ones, by frequent repetitions, and by a strict adherence to the rule that answers be always given in complete short sentences of the foreign language, and never by "yes," "no," or some other short word alone.

Grammatical and lexical details for the thorough understanding of the lessons are given. The rules are deduced from the examples, and the student is trained in their correct use by interesting connected matter.

Written examinations consist of translations from English into the foreign language and of questions and answers in the foreign language. No English appears in an examination paper. No time is allowed for hesitancy. Answers are spoken fluently and written rapidly.

Instruction is given three hours per week.

Students may elect German during the Junior or Senior year. The work is optional, but credit towards a degree is allowed for the successful completion of the work. Work begun and continued a month may not be dropped without consent of the Faculty.

The languages taught are German and French.

460. German.—Worman's *Modern Languages*, first and second German books; *Studien und Plaudereien*, first and second books; Fischer's *Practical Lessons in German; Practical German Grammar*, by Calvin Thomas; *German Reader*, by Fischer; and a scientific reader. Elective for Juniors and Seniors. Doctor Rudy.

461. French.—Worman's *Modern Languages*, first and second French books; Worman's *Grammaire Française;* selected short stories from French literature, and scientific readers. Doctor Rudy.

This subject may be taken by special petition to the Faculty.

MILITARY SCIENCE.

480. Drill.—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier, squad, company and battalion; ceremonies including inspection, parade, review and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Captain Peace and Cadet Officers of the Battalion.

Tactics.—Theoretical instructions in infantry drill regulations, field-service regulations, manual for guard duty, and small-arms firing manual. One hour each week required of Sophomores. Captain Peace.

TWO-YEAR COURSE IN TEXTILE INDUSTRY.

The two-year course is offered to students who cannot spend the time required for the four-year course, or who have had practical experience in the mill and wish to avail themselves of our facilities for giving instruction in textile work.

VIIIa. The Two-year Course in Textile Industry.

First Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Carding and Spinning	2	2	2
Weaving	3	3	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Mechanical Drawing	2	2	2
Forge-work	2	2	--
Foundry	--	--	2
Arithmetic	5	--	--
Algebra	--	5	5
English	3	3	3
Military Drill	3	3	2
Totals	22	22	21

Second Year.

Carding and Spinning	5	5	5
Warp Preparation	--	--	1
Weaving	4	4	3
Textile Designing	2	1	1
Cloth Analysis	--	1	1
Dyeing	3	3	3
Machine-shop Work	2	2	2
English	3	3	3
Military Drill	3	3	2
Totals	22	22	21

DESCRIPTION OF SUBJECTS.

Carding and Spinning.—Lectures and recitations; practice in operating card and spinning room machinery. Cotton: classifying the plant; its growth; varieties; ginning, baling, and marketing the raw staple. Cotton at the mill; selecting and mixing. Openers and lappers; cards; sliver lap machines; ribbon lap machines; combers; railway-heads; drawing-frames; slubbers; intermediate; speeders; jacks. Ring spinning-frames and mules. Spoolers. Twisters; reels; cone-winders. Construction and functions of each machine; making the various calculations. Drafts; speed of parts; production. Producing yarns of different counts, single and ply. Testing yarns for breaking strength and elasticity. Text-books: *Cotton Mill Processes and Calculations*, by Tompkins; *Cotton Spinning*, by Nasmith. Required of first and second year students. Assistant Professor Parker.

Weaving.—Lectures on construction of plain, twill, sateen, gingham, pick and pick looms are given; also on construction of dobbies and jacquards.

Lectures begin with the construction of plain loom, first taking up the principal movements in weaving, then the various secondary or auxiliary movements, and the relation and timing of one movement to another. Additional motions and parts required to be added to a plain loom in order to weave twill and sateen cloths. Magazine looms; construction and advantages. Drop box looms; construction of the various motions; arranging colors in boxes; methods of building box chains. Dobby: construction of single and double index; setting, and starting up dobby on loom; fixing dobby. Pick and pick looms: construction of loom; construction of head motion; building box chains to have easy-running loom. Jacquard: single and double lift; construction and tie-up. Weave-room calculations for speed and production; counts of reed and cotton harness. Finishing cotton fabrics. Necessary equipment for warp preparation, weaving, finishing; approximate cost of production of fabrics in the different processes. Text-book: *Weaving, Plain and Fancy*, by Nelson. Required of first and second-year students. Professor Nelson and Mr. Steed.

Textile Designing.—Lectures and practice in designing. Method of representing weaves on design paper. Foundation weaves; plain; twill; satin. Ornamentation of plain weave; color effects on plain weave. Derivative weaves; plain and fancy basket weaves; warp and filling rib weaves. Broken twills; curved twills; corkscrew twills; entwining twills. Granite weaves; satin shading. Combination of weaves; figured weaving on plain ground. Fancy satin and figured stripes on plain ground. Spots arranged in different orders on plain, twill, satin ground. Imitation leno; honeycomb weaves. Bedford cords and combination with other weaves. Wave designs; pointed twills; diamond effects. Cloths backed with warp; cloths backed with filling. Cloths ornamented with extra warp. Cloths ornamented with extra filling. Combination of plain and fancy weaves. Practical application of weaves to fabrics. Advanced designs. Required of first and second-year students. Professor Nelson and Mr. Steed.

Cloth Analysis and Fabric Structure.—Calculating particulars of cloth from data ascertained from samples. Shrinkages. Dents in patterns; patterns in warp. Drafting and pattern chain building. Reed and harness calculations. Calculations to obtain quantities of warp and filling in stripe and check fabrics. To find number of threads per inch, using a given weight of warp; also number of picks per inch, using a given weight of filling. Yarn calculations. System of numbering woolen, worsted, silk, linen, and cotton yarns. Determination of one system of yarn to that of another. Textile calculations. Determining the number of threads and picks per inch to make a perfect cloth. Calculations to determine the texture in an unequally reeded fabric. Diameter of threads. Balance of cloth. Texture for double cloth. Required of first and second-year students. Professor Nelson and Mr. Steed.

DRAWING AND SHOP WORK.

Mechanical Drawing.—Work in the use of the pencil; technical sketches of objects, usually parts of a machine. Geometric drawing; isometric and cabinet drawing; elementary projections; drawings made to scale from working sketches of pieces of a machine. Elementary principles of descriptive geometry; cylinders, cones, and prisms; intersection and development of surfaces; miscellaneous problems. Two periods. Required of first-year students. Mr. Coburn.

Forge Work.—Exercises in working with iron, welding; use and care of forge tools and fires. Two periods. Required of first-year students. Mr. Wheeler.

MATHEMATICS.

Arithmetic.—Milne's *Standard Arithmetic.* A thorough consideration of the fundamental methods and operations of Arithmetic, beginning with decimal fractions and completing the subject. Five periods, first term. Required of first-year students. Mr. Harrelson and Mr. Tucker.

Algebra.—Wells' *New Higher Algebra.* A thorough treatment of the fundamental conceptions and operations of Elementary Algebra, with special attention to factoring, fractions, simple equations, simultaneous equations in two or more unknowns, and problem solving. Five periods, second and third terms. Required of first-year students. Mr. Harrelson, Mr. Angel, and Mr. Tucker.

Drill.—Calisthenic exercises; bayonet exercises; military signaling; school of the soldier; squad, company and battalion; ceremonies including inspection, parade, review and guard mounting; guard duty; marches and minor tactics; attack and defense; gallery and range target practice. Three hours each week for the first and second terms; two hours each week for the third term. Captain Peace and Cadet Officers of the Battalion.

ENGLISH.

Short-course English.—This is a thoroughly practical course in the elements of grammar, and of composition, especially spelling, sentence and paragraph structure, and letter-writing. Some reading is done in class and supplementary reading also is assigned for private study. Three hours a week. Required of first-year students. Doctor Summey and Mr. Peckham.

ADDITIONAL SUBJECTS IN THE SECOND YEAR.

Warp Preparation.—Lectures on construction of warp preparation machinery, spooler; section warper, ball warper; size kettle; slasher. Practice in operating machines. Laying out pattern warps for long and short chain beaming. Size mixing and boiling; value of ingredients used in sizing; sizing receipts for light, medum, and heavy sizing. One period, third term. Required of second-year students.

Dyeing.—The object of this course is to give the student a sound practical knowledge of the fundamental principles which underlie the arts of bleaching, dyeing, mercerizing, etc., of cotton yarns and fabrics. The manipulation of the various machines used in bleaching, dyeing and mercerizing is carefully explained. The physical and chemical properties of the material to be dyed receive first consideration, followed by a study of the adaptability of water for bleaching, dyeing, mordanting, etc. The practical application of the dyestuffs themselves is treated in the most thorough and detailed manner, *e. g.*, the substantive dyestuffs dyed direct, diazotised and developed, aftertreated with metallic salts, topped with basic dyes, etc., the basic dyestuffs, sulphur dyestuffs, indanthrene dyestuffs, etc. Practice in colormixing and matching is given. The student in this way acquires a collection of several hundred dyed samples which, when mounted in his pattern book, serve as a valuable reference. The course is supplemented by lectures, which will include the consideration of many difficult problems that arise in the dye-house. Three periods. Required of second-year students. Mr. HALSTEAD.

Machine-shop Work.—Bench and machine work. Exercises in chipping and filing. Exercises in lathe work, boring, reaming, drilling, planing, milling, and shaper work. Two periods. Required of second-year students. Mr. PARK.

ENGLISH.

Composition and Rhetoric.—After a review of grammatical principles, especial attention is given to the selection of subjects and the planning of essays, to the choice of words, and to the structure of sentences and paragraphs. Standard poetry and prose are read in class, and additional books are assigned for parallel reading. Frequent short themes are written. Three periods. Required of second-year students. Professor HARRISON, Doctor SUMMEY, and Mr. PECKHAM.

NORMAL COURSES.

I. For Rural Teachers:
(a) Two-year Course.
(b) One-year Course.
(c) Two-weeks Spring Course.

The Normal Courses are intended for the education of teachers, both men and women, chiefly along industrial lines. Industrial education, particularly in agriculture, is being introduced into our public schools, and there is a constant demand for teachers well trained in these subjects. It is hoped by means of the Normal Courses to help supply this demand. Our School Law already requires agriculture to be taught in the public schools, and manual work will doubtless be added.

The courses are devoted largely to agriculture and nature study, and include also a review of other public-school studies.

Persons already engaged in teaching may, at slight expense of time and money, by means of the short course, or May School, make themselves proficient in one or more industrial lines. Persons preparing to teach may take the full courses, and thus become proficient not only along industrial lines, but also in the other public-school branches and in one or more sciences, or in higher mathematics and English. The industrial training given is both practical and theoretical, and is arranged with reference to the present needs of the public schools in North Carolina. The Normal Courses are as follows:

I. Courses for Rural Teachers.

(a) TWO-YEAR COURSE.

First Year.

SUBJECTS.		PERIODS A WEEK.		
		1st Term.	2d Term.	3d Term.
Agriculture		3	3	3
Nature Study	Plants	3	3	3
	Animals	3	3	3
English		3	3	3
Mathematics		5	5	5
Horticulture		3	3	3
Military Drill		3	3	2
Totals		23	23	22

Second Year.

SUBJECTS.	PERIODS A WEEK.		
	1st Term.	2d Term.	3d Term.
Farm Equipment	4	--	--
Soils	--	4	--
Crops	--	--	4
Plant Diseases	3	--	--
Physics	--	3	--
Botany	--	--	3
Mathematics	4	4	4
English	3	3	3
Drawing	2	2	2
Military Drill	3	3	2
Totals	19	19	18

(b) ONE-YEAR COURSE.

Methods of Teaching Agriculture	2	2	2
Agriculture (general)	3	3	3
Horticulture	3	3	3
Animal Husbandry	3	3	3
Dairying	5	--	--
Diseases of Live Stock	--	5	--
Botany	3	--	--
Poultry	--	3	3
Entomology	--	--	3
Diseases of Plants	--	--	2
Agricultural Literature	1	1	1
Totals	20	20	20

Elective studies in any College department, *e. g.*, Agricultural Chemistry, Land Surveying, Physics and Physical Laboratory, Drawing, and others.

THE MAY SCHOOL FOR TEACHERS.

MAY 14 TO 26, 1913.

Agriculture, Nature Study, and Common Branches.—This course is designed to meet the needs of teachers of the public, common, and high schools who desire more preparation in Nature Study and Agriculture. Attention is also given to school gardens. The common branches are reviewed. Attendance here meets the legal requirement of attendance at an institute once in each two years.

The laboratories, library, specimens, and all other equipment of the College are at the service of students of this course, affording an excellent opportunity for instruction.

The work is so arranged that teachers who desire to devote all of their time to Agriculture and Nature Study can do so, while those teachers who wish to devote part of their time to Agriculture and Nature Study and part to the common branches can pursue this course.

Instruction will be offered in the following subjects, from which election may be made to best meet particular needs:

Elementary Agriculture and Nature Study, Prof. H. R. Fulton.
School Management, Supt. Z. V. Judd.
School Gardens, Supt. F. M. Harper.
Farm Crops, Prof. C. L. Newman.
Farm Animals, Prof. J. C. McNutt.
Horticulture, Prof. J. P. Pillsbury.
Soils, Prof. M. E. Sherwin.
Insects, Mr. Z. P. Metcalf.
Poultry, Mr.

Arithmetic, English, History, etc., are taught by the regular professors and instructors of the College.

No fees are charged for this course. Board may be had at $2.75 a week, and lodging at about $1 a week.

Only a limited number can be accommodated. Rooms must be engaged in advance.

For particulars and reservation, write to

THE REGISTRAR,
A. and M. College, West Raleigh.

DONATIONS.

To the Textile Department.

Universal Winding Company, Boston, Mass.—One filling winder; supplies for winding and doubling machine.

Hampton Manufacturing Company, Easthampton, Mass.—Mercerized cotton yarns.

Ivey Manufacturing Company, Hickory, N. C.—Picker-sticks, lug straps.

L. H. A. Schwartz & Co., Boston, Mass.—Samples of foreign cottons.

Wm. C. Robinson & Son Co., Baltimore, Md.—Lubricating oils.

Stuart W. Cramer, Charlotte, N. C.—Four volumes. Useful Information for Cotton Manufacturers.

Textile Manufacturer, Charlotte, N. C.

Mill News, Charlotte, N. C.

Southern Textile Bulletin. Charlotte, N. C.

Wool and Cotton Reporter, Boston, Mass.

Fibre and Fabric, Boston, Mass.

New York Journal of Commerce, New York.

Kallé & Co., New York.—Collection of dyestuffs and pattern cards.

Cassella & Co., New York.—Collection of dyestuffs and pattern cards.

Farbenfabriken of Elberfeld Company, New York.—Collection of dyestuffs and pattern cards.

H. A. Metz & Co., New York.—Collection of dyestuffs and pattern cards.

Berlin Aniline Works, New York.—Collection of dyestuffs and pattern cards.

To the Department of Mechanical Engineering.

Frank A. Patterson & Co.—One 25-horse-power Berryman closed feed water heater.

Warren Webster & Co.. Camden, N. J.—Samples of new radiator valves.

William Powell Company, Cincinnati, Ohio.—Sample of Star Globe valve.

American Steel and Wire Company, Chicago, Ill.—A set of 91 lantern slides on "Steel Making," with lecture.

A. Leschen & Sons, St. Louis, Mo.—Samples of wire ropes and cables.

Cosgrove-Cosgrove Manufacturing Company, Philadelphia, Pa.—Samples of "Elasto" flexible lead fittings.

The Jefferson Union Company, Lexington, Mass.—Sectioned samples of unions.

Patterson Allen Engineering Company.—Sample of special pipe flange and pipe.

Robbins Conveying Belt Company, Passaic, N. J.—Lantern slides.

C. W. Hunt & Co., West New Brighton, N. Y.—Lantern slides.

Jeffrey Manufacturing Company, Columbus, Ohio.—Lantern slides.

J. H. Williams & Co., Brooklyn, N. Y.—A set of forgings, showing the steps in drop forging.

Copies of text-books from the following publishers:

McGraw-Hill Book Company.
The Macmillan Company.
D. C. Heath & Co.
Henry Holt & Co.
Domestic Engineering Company.
D. Van Nostrand Company.
American Book Company.
Ginn & Co.

Magazines from the following publishers:

Cold Storage and Ice Trade Journal.
Southern Machinery.

Especially low prices on equipment bought from the following:

Kelly Foundry and Machine Company, Goshen, Ind.—Rocking and dumping grate for 200-horse-power Atlas boiler.

The Ohio Blower Company, Cleveland, Ohio.—Rotary ball-bearing ventilators for forge shop.

The William Powell Company, Cincinnati, Ohio.—Steam valves.

The Kennicott Company, Chicago Heights, Ill.—An 8,000-pound automatic water weigher.

Motsinger Device Manufacturing Company, LaFollette, Ind.—On magnetos for gas engine ignition.

Samuel C. Rogers & Co., Buffalo, N. Y.—On planer knife grinder with saw gumming attachment.

Foos Gas Engine Company, Springfield, Ohio.—On an 11-horse-power gasoline engine.

To the Department of Physics and Electrical Engineering.

Southern Power Company.—A fine collection of high-tension line material, consisting of cross-arms, insulators of various types, cable clamps and other devices used in line construction; photographs and a set of drawings of poles, substations, and engineering details.

Carolina Power and Light Company.—A set of high-tension line insulators.

National Carbon Company.—An exhibition case of carbon products, including battery electrodes; arc-lamp electrodes; dynamo brushes; furnace electrodes; telephone parts; lightning arresters, etc.

Electric Storage Battery Company, Philadelphia.—Exhibit of storage battery plates and material.

John A. Roebling's Sons & Co., Trenton, N. J.—A case of high-tension cables and a case of telephone cables.

Union Carbide Company, Niagara Falls, N. Y.—Samples and containers for calcium carbide.

International Acheson Graphite Company, Niagara Falls, N. Y.—Samples of graphite, electrodes, powders, and lubricants.

General Electric Company, Schenectady, N. Y.—A set of pictures.

Westinghouse Electric and Manufacturing Company, Pittsburg, Pa.—A set of pictures.

Crocker-Wheeler Company, Ampere, N. J.—A set of pictures.

Wagner Electric and Manufacturing Company, St. Louis, Mo.—A set of pictures.

Allis-Chalmers Company, Milwaukee, Wis.—A set of pictures.

Kellogg Switchboard and Supply Company, Chicago.—A set of pictures.

McGraw-Hill Book Company, New York.—A set of portraits of distinguished engineers and physicists.

The following publishers have presented the department with books:

The Van Nostrand Company.
The Macmillan Company.
D. C. Heath & Co.
Longmans, Green & Co.
Allyn & Bacon.
Ginn & Co.
Walker Electric Company.
Macbeth-Evans Glass Company.

The following publishing companies have donated periodicals:

Electrical Review and Western Electrician Publishing Company.
McGraw Publishing Company.
Technical Publishing Company, San Francisco.
Southern Electrician.
Cotton Publishing Company, Atlanta, Ga.
General Electric Company.
Illuminating Engineering Publishing Company.

To the Civil Engineering Department.

W. K. Carr, Washington, D. C.—A 5-inch equatorial telescope.

Books Given to the Library, 1911-1912.

Col. J. Bryan Grimes (author and editor).—*Notes on Colonial North Carolina; Great Seal of the State of North Carolina; Abstract of North Carolina Wills.*

Dr. T. P. Harrison.—*Essentials of Æsthetics in Painting,* G. L. Raymond; *Orator's Manual.* G. L. Raymond; *Art of Debate,* R. M. Alden; *Selections from Southern Poets,* W. L. Weber.

Miss Loulie Sherwood.—*Kentucky Cardinal,* James Lane Allen; *Aftermath,* James Lane Allen.

Trinity College.—*Inauguration of President Few,* Trinity College publication.

State of North Carolina.—*Natural History of North Carolina,* John Brickell.

Harwood Frost (author).—*Good Engineering Literature.*

J. B. Hubbell (author).—*Lives of Franklin Plato Eller and John Carlton Eller.*

Coworkers' Fraternity of Boston.—*Legal Doctrine and Social Progress,* Frank Parsons.

Professor C. L. Newman.—Seventy-five volumes of agricultural books.

Executive Committee of the American Society for Testing Materials.—*The Life and Life-work of Charles B. Dudley.*

Dr. F. L. Stevens.—*Plant Relations,* by Coulter.

To the Soils Department.

American Coal Products Company, New York, N. Y.—Exhibition case of coal and its by-products.

Pomona Terra-cotta Company, Pomona, N. C.—Twelve hundred feet of 4-inch clay drain tile; also samples of clay drain tile for exhibition.

Contentnea Concrete Company, Wilson, N. C.—Samples of cement drain tile for exhibition.

Bureau of Soils, Washington, D. C.—Plane table, tripod, compass, alidade, auger, hammer, and odometer donated for use in soil survey during the year.

To the Modern Language Department.

Spanish Class, 1913.—One middle piece Globe-Wernicke bookcase.

To the Vorwärts Verein—*Messrs. Bergthold, Detjen, and Klein.*—One bulletin-board.

Members of the Vorwärts Verein.—One top, one bottom, and one middle piece Globe-Wernicke bookcase.

Senior Class in Modern Languages.—One middle piece Globe-Wernicke bookcase.

Dr. A. Rudy.—*Berlitz Methode*, 1st and 2d part; *Commercial German*, Arnold Kutner; *Ein Nordischer Held*, H. H. Boll; *Elementary German Grammar*, Worman; *Ernstes und Heiteres*, J. Schrakamp; *Foundations of German*, Kaiser and Monteser; *Germelshausen-Gerstäcker*, A. Busse; *German Prose*, Osthaus and Biermann; *Geschichten aus der Tonne; Glück Auf*, Müller and Wenckebach; *Grundzüge der Naturlehre*, Wallentin; *Helmholtz's Populäre Vorträge*, Shumway; *Lessing's Minna von Barnhelm; Macmillan's Progressive German Course; Märchen und Erzählungen für Anfänger*, Guerber; *Verdeutschungsbücher VII*, Die Schule; *Wagner's Entwicklungslehre; Wildermuth's Der Einsiedler.*

CATALOGUE OF STUDENTS.

Graduates.

Name.	*Post Office.*	*Course.*
Charles Edward Bell, B.S.,	Kinston,	Chem.
James Howard Brown, B.S.,	Charlotte, R. 4,	Agr.
John Downie Cooper, Jr., B.E.,	Henderson,	M. E.
Paul Everett Cowgill, M. E.,	Columbus, Ohio,	C. E.
James Leonidas Dunn, B.S.,	Scotland Neck,	Agr.
John William Harrelson, B.E.,	Lawndale,	M. E.
William Flaud Morris, B.E.,	Asheboro,	M. E.
William Franklin Pate, B.S.,	West Raleigh,	Chem.
Duane B. Rosenkrans, A.B.,	West Raleigh,	Agr.
Thomas Barnes Stansel, B.S.,	Allenton,	Chem.

Senior Class.

Neily Ormond Alexander,	Matthews, R. 17,	Agr.
Allison Hodges Bond,	Fayetteville,	M. E.
Alan Thurman Bowler,	Sanford, Fla.,	C. E.
Clayton Edward Brown,	Chocowinity,	C. E.
Stephen Cole Bruner,	Raleigh,	Agr.
Brice Legrier Caldwell,	Concord,	Chem.
Charles Lee Cruse,	Salisbury,	Agr.
Ralph Campbell Deal,	Concord,	E. E.
Ernest Cofield Derby,	Rocky Mount,	C. E.
McNeely DuBose,	Morganton,	E. E.
Nevin Gould Fetzer,	Concord,	Chem.
Thomas Fenner Gibson,	Red Springs,	C. E.
Richard Frederick Giersch, Jr.,	Raleigh,	E. E.
William Haywood Graham, Jr.,	Rowland,	E. E.
Charles Ganzer Hall,	Wilmington,	Tex.
Robert McKenzie Hardison,	Morven,	C. E.
Nathaniel David Hargrove,	Richmond, Va.,	Agr.
Harry Hartsell,	Asheville,	E. E.
Willis Askew Holding,	Raleigh,	Chem.
Carl Horn,	Rutherfordton, R. 3,	Tex.
Samuel Benjamin Howard,	Morganton,	M. E.
Ralph Wilkinson Howell,	Belhaven,	Agr.
John Gordon Kellogg,	Sunbury,	Agr.

Name.	*Post Office.*	*Course.*
Sam. Jones Kirby,	Selma, R. 1,	Agr.
Carl Joshua Lambeth,	Thomasville,	M. E.
Curtis Williams Lee,	Monroe,	M. E.
Thomas Pinkney Lovelace,	Henrietta,	E. E.
James Edward McGee,	Mount Olive,	Tex.
Thomas Hunt Mackie,	Yadkinville,	Agr.
Neill McQueen,	Fayetteville,	Tex.
Walter Ray Mann,	Aberdeen,	Agr.
Henry Bascom Mercer,	Wilmington,	C. E.
Simon Turner Mitchiner,	Garner,	M. E.
James Richard Mullen,	Charlotte,	Chem.
Charles McKee Newcomb,	Raleigh,	C. E.
Charlie Washington Owens,	Saratoga, R. 1,	C. E.
Alexander Holladay Pickel,	Raleigh,	E. E.
Bryant Monroe Potter,	Southport,	C. E.
Louis Napoleon Riggan,	Raleigh,	C. E.
Archie Knight Robertson,	Rowland,	Agr.
David Walter Seifert,	New Bern,	C. E.
Fleming Bates Sherwood,	Raleigh,	Chem.
William Talmage Shull,	Beaufort,	C. E.
James McCree Smith,	Rutherfordton, R. 4,	Agr.
Orus Wilder Smith,	Kipling,	M. E.
Edward Pinkney Speer,	Boonville,	E. E.
Talmage Holt Stafford,	West Raleigh,	Agr.
Clarence Alexander Stedman,	Greensboro,	Chem.
Needham Bryan Stevens,	Goldsboro,	Agr.
David Bruce Sturgill,	Piney Creek,	C. E.
Morgan Franklin Sugg,	Kinston,	Tex.
William Perry Sugg,	Princeton,	C. E.
Arthur Willis Taylor,	Raleigh,	M. E.
Culver Murat Taylor,	Tarboro,	E. E.
Herbert Lee Taylor,	Raleigh,	M. E.
George Logan Thompson,	Goldsboro,	E. E.
John Sam Thompson,	Lewiston,	Agr.
George Reid Trotter,	Charlotte,	E. E.
Harry Moore Walton,	Morganton,	E. E.
Hugh Powell Whitted,	Mebane,	C. E.
Fred. Barnett Wheeler,	High Point,	M. E.
Wallace Woodson Williams,	Raleigh,	Chem.

Junior Class.

Name.	*Post Office.*	*Course.*
Lewis Allen Ammon,	Marshall, R. 4,	Agr.
Charles Sidney Andrews,	Kinston,	M. E.
Gilbert Luther Arthur, Jr.,	Morehead City,	Chem.
Charles Albion Bache,	Live Oak, Fla.,	E. E.
Roger Moore Bailey,	Elm City,	Agr.
Grady Lee Bain,	Greensboro,	C. E.
Edwin Dennis Bowditch,	Toecane,	Agr.
Rodney Law Boylin,	Wadesboro,	Agr.
George Wallace Brice,	Charlotte,	E. E.
Herman Burke Briggs,	West Raleigh,	M. E.
Amos Baxter Clement,	Oxford, R. 1,	E. E.
William Randolph Clements,	Raleigh,	E. E.
Thomas Alexander Cole,	Cole's Mills,	Agr.
John Burke Coward,	Webster,	E. E.
Liston Lloyd Dail,	Chinquapin,	Chem.
James Madison Davis,	Asheboro,	E. E.
Paul Dexter Davis,	Fremont,	C. E.
John Bartlett Fearing,	Elizabeth City,	Chem.
Daniel Burnie Floyd,	Fairmont,	M. E.
Roy Durant Goodman,	Concord, R. 2,	Agr.
Cicero Fred Gore,	Wilmington,	C. E.
William Henry Griffin, Jr.,	Goldsboro,	C. E.
Felix Stanton Hales,	Wilson,	C. E.
LeRoy Corbett Hand,	Chadbourn,	Tex.
Henry Spooner Harrison, Jr.,	Enfield,	Agr.
Thomas Roy Hart,	Monroe,	Tex.
Ernest Eccles Hedrick,	Lexington,	Tex.
Thomas Jasper Hewitt,	New Bern,	C. E.
Riley Weaver Higgins,	Leicester, R. 1,	Agr.
Peter Armstrong Holt.	Graham,	Agr.
Walter Cleary Hopkins,	Newport News, Va.,	C. E.
Ernest Judson Jeffress,	Canton,	E. E.
Douglas Creelman Jeffrey,	West Raleigh,	C. E.
James Wright Johnson,	Garland,	E. E.
Harvey Langill Joslyn,	Farm School,	Agr.
Joseph Drewry Joyner,	Franklinton,	E. E.
Sir Keith Keller,	Lilesville,	C. E.
George Edison Kidd,	Charlotte,	E. E.
Louis Braswell Knight,	Tarboro, R. 1,	Agr.

Name.	*Post Office.*	*Course.*
William Cornelius Lassiter,	Potecasi,	Tex.
Nathan Wilson Legrand,	Rockingham,	E. E.
Morris Liferock,	Yonkers, N. Y.,	C. E.
James Ivon McCallum,	Charlotte,	C. E.
Frank Whiteside McComb,	Hickory,	M. E.
Robert Sylvanus Mauney,	Murphy, R. 1,	E. E.
Robert Tolar Melvin,	White Oak,	Agr.
Lewis Larkins Merritt,	Wilmington,	C. E.
Ronald Earl Mewborn,	Kinston,	E. E.
Thomas Kenneth Mial,	Raleigh,	M. E.
William Timothy Nixon,	Sunbury,	Agr.
Walter Herbert Parker,	Rocky Mount,	M. E.
Thad. Rowland Parrish,	Middleburg,	E. E.
Henry Aubrey Quickel,	Lincolnton,	Tex.
John Olan Rankin, Jr.,	Gastonia,	Agr.
Walter Eugene Redden,	Horea Path, S. C.,	M. E.
Garland Thomas Rowland,	Middleburg,	E. E.
William Dudley Simpson,	Raleigh,	C. E.
Robert Lee Sloan,	Charlotte, R. 5,	Agr.
Francis Clark Smith,	New Bern,	C. E.
Colin George Spencer,	Asheboro,	Agr.
John Brown Steele,	Yadkin Valley,	Agr.
William Beaver Stover,	Granite Quarry,	E. E.
Charlie Berryhill Stowe,	Charlotte, R. 4,	Agr.
William Henry Sullivan,	Greensboro,	C. E.
Stanton Banks Sykes,	Efland, R. 2,	E. E.
Alvin Chesley Wilson,	Raleigh,	E. E.

Sophomore Class.

Graham Hudson Anthony,	Shelby,	M. E.
Bascum Otto Austin,	Charlotte,	E. E.
Walton Avery,	Morganton,	C. E.
Clare Russell Bailey,	Chadbourn,	Agr.
Hugh Bailey,	Woodleaf,	Agr.
Richard Griffin Ball,	Raleigh,	Chem.
Thomas Leavingston Bayne, Jr.,	Manchester,	Agr.
George Ernest Beal,	Rocky Mount, R. 3,	Agr.
Herman Von Biberstein,	Charlotte,	C. E.
Enos Clarkson Blair,	Raleigh,	Agr.
Julian Chisholm Brantley,	Spring Hope,	Agr.

Name.	*Post Office.*	*Course.*
Victor Winfred Breeze,	Durham,	C. E.
Charley Meekins Brickhouse,	Columbia,	Agr.
James Ramsey Buchanan,	Dillsboro,	E. E.
Harley Wilson Bullard,	Chadbourn,	Agr.
Henry Burleson,	Plumtree,	E. E.
George Dowell Burroughs,	Everett,	Agr.
Robert Olin Caldwell,	Concord,	Agr.
Walter Graham Caldwell,	Huntersville,	Agr.
James Albright Chambers,	Asheville,	C. E.
Edward Lamar Cloyd,	Lenoir,	M. E.
Edwin Lacy Coble,	Greensboro,	Agr.
Burtis O. Cone,	Spring Hope,	Agr.
Howard Milton Cool,	Cleveland, Ohio,	Agr.
David Davies Cox,	Cullowhee,	M. E.
St. John Cox,	Cullowhee,	M. E.
Allen Bacon Cozart,	Stem,	Agr.
Leland Miot Craig,	Charlotte,	C. E.
Irl Raymond Crane,	Marshville,	E. E.
Franklin Lee Crawford,	Winston-Salem,	Agr.
Woodfin Grady Credle,	Swan Quarter, R. 2,	Agr.
John Jennings Dunlap,	Wadesboro,	Agr.
William Robert Everett,	Palmyra, R. 1,	Agr.
Archie Arrington Farmer,	Wilson,	E. E.
John Edmund Ferebee,	Camden,	Agr.
Karl McArtee Fetzer,	Reidsville,	E. E.
James Fontaine,	Woodsdale,	E. E.
William Benjamin Foster,	Winston-Salem,	M. E.
James Roscoe Franck,	Richlands,	Agr.
Roger Jerome Franklin,	Winston-Salem,	Agr.
John George Harvey Geitner, Jr.,	Hickory,	Tex.
Ralph Allison Gill,	Statesville,	E. E.
Charles Burgwyn Gorrell,	Ore Hill, R. 1,	Agr.
John Wesley Griffith,	Winston-Salem,	E. E.
Winston Payne Gwathney,	Richmond, Va.,	C. E.
Jack Wilson Hardie,	Brown Summit, R. 2,	M. E.
Drew Sugg Harper,	Snow Hill,	Agr.
John Harvey, Jr.,	Snow Hill,	C. E.
William Snelling Hicks,	Raleigh,	Chem.
Roney Melton High,	Kenly,	E. E.
Hubert Royster Holding,	Raleigh,	Agr.

Name.	*Post Office.*	*Course.*
Frank Henry Houck,	Hickory,	C. E.
William Tisdale Hurtt,	New Bern,	M. E.
William Leon Jewell,	Wilmington,	C. E.
Lacy John,	Lumber Bridge, R. 1,	Agr.
Willis Neal Johnston,	Mooresville,	M. E.
William Manley Jones,	Raleigh,	M. E.
Charles Martin Kephart,	High Point,	E. E.
John Lindon Knox,	Town Creek,	Agr.
Fabius Henry Kohloss,	Columbia,	E. E.
Nathan Sampson Lachicotte,	Waverly Mills, S. C.,	Agr.
Archie Rhem Lane,	Hertford,	C. E.
William Albert Lane,	Goldsboro,	M. E.
Edgar Clark Latham,	Plymouth,	E. E.
Douglas Allen Leard,	Raleigh,	C. E.
Lawrence Tyson Lee,	Raleigh,	Chem.
Fred. Bennett Leggett,	Wadesboro,	Agr.
Joseph Raoul Leguenec,	Abbeville, S. C.,	C. E.
William Dixon Lewis,	Gastonia, R. 2,	Agr.
William Bennett Little, Jr.,	Wadesboro,	Agr.
Marion Lamar Liverman,	Roxobel,	C. E.
Albert Lytch,	Laurinburg,	Agr.
Thomas Robert McDearman,	Rocky Mount,	C. E.
Robert Russell McIver,	Sanford,	Agr.
James Edgar McNeely,	Mooresville,	M. E.
Harvey Campbell McPhail,	Mount Olive,	Agr.
Sherrod Ervin Menzies,	Hickory,	M. E.
Joseph Edward Michael,	Gibsonville,	Agr.
Thomas Guy Monroe,	Eagle Springs,	Agr.
Warren Lafayette Moody,	Concord,	Chem.
Otis Corcoran Moore,	Bennettsville, S. C.,	E. E.
Frank Bullock Morton,	Townsville,	E. E.
John Colin Murchison, Jr.,	Charleston, S. C.,	Agr.
Henry Kollock Nash, Jr.,	Wilmington,	Agr.
Julius Isaac Neal,	Madison, R. 1,	Agr.
Thomas Williamson Nicholls,	Edenton,	E. E.
Edgar Byron Nichols,	Mount Airy, R. 3,	M. E.
Lee Raboteau Page,	Aberdeen,	Agr.
Richard Eastwood Page,	Biscoe,	Agr.
Peyton Hogue Park,	West Raleigh,	C. E.
Fitzgerald Elizur Patton,	Pisgah Forest,	Agr.

Name.	*Post Office.*	*Course.*
WILL. ROBERT PATTON,	Morganton,	C. E.
MILTON VANCE PERRY,	Durant's Neck, R. 3,	M. E.
LINDSAY M. PHELPS,	Plymouth,	C. E.
HENRY MARRIOTT PHILIPS,	Battleboro, R. 2,	Agr.
ARTHUR JEFFERSON PHILLIPS, JR.,	Portsmouth, Va.,	M. E.
JOSEPH JENNINGS PHILLIPS,	Portsmouth, Va.,	C. E.
ROBERT AVERY PLYLER,	Monroe, R. 5,	E. E.
FRED. DAVIS POISSON,	Wilmington,	Chem.
TRACY WINCHESTER PORTER,	Charlotte,	Agr.
WILLIAM OWEN POTTER,	Cash Corner,	M. E.
CHARLES LONDON PROFFITT,	Bald Creek,	Agr.
THOMAS HECTOR PURCELL,	Maxton, R. 2,	Tex.
MILLARD REED QUINERLY,	Grifton, R. 1,	Agr.
JOHN BARTOW REES,	Lincolnton,	E. E.
WADE HAMPTON REINHARDT,	Stanley,	Agr.
THURMAN LESTER ROBERSON,	Robersonville,	M. E.
DANIEL ERNEST ROBERTS,	Red Springs,	Agr.
JOE WILLIAM ROSS,	Fort Mill, S. C.,	Agr.
EMORY PELL ROUSE,	LaGrange,	E. E.
JOHN FRANKLIN SCHENCK, JR.,	Lawndale,	M. E.
WILLIAM THOMAS SHAW, JR.,	Weldon,	Tex.
PRICE ELIAS SHERRILL,	Mount Ulla,	Agr.
FRANK STEED SMITH,	Greensboro,	M. E.
PHIL. CLARKE SMITH,	Tettington, Va.,	Agr.
WALTER HERBERT SMITH,	Prospect Hill, R. 1,	E. E.
WHITEFOORD INGERSOLL SMITH,	Asheville,	Tex.
ROY CLINTON STOCKWELL,	Raleigh,	Chem.
REDDING STANCILL SUGG,	Rocky Mount, R. 5,	Agr.
LOYD ERSKINE SUTTON,	Monroe, R. 5,	E. E.
RAY SUTTON,	LaGrange,	E. E.
WALTER CLYBURN TAYLOR,	Rhodhiss,	Tex.
ZEB. WHITEHURST TAYLOR,	Tarboro,	E. E.
ARTHUR LEE TEACHEY,	Teachey,	Agr.
DANIEL WOOD THORP, JR.,	Rocky Mount, R. 4,	C. E.
JAMES RICHARD TOWNSEND,	Greensboro,	C. E.
THOMAS SETTLE TUCKER,	Fair Bluff,	C. E.
CLYDE LOREINE VANN,	Fayetteville,	E. E.
EDWARD WILLIAM WALDROUP,	Hayesville,	E. E.
JAMES HUGH WARD,	Rocky Mount,	C. E.
JAMES WIGGINS WATTS, JR.,	Williamston,	E. E.

Name.	*Post Office.*	*Course.*
Edward Howerton Weatherspoon,	Sanford,	E. E.
Mebane Strange White,	Mebane, R. 3,	M. E.
Tom. Brem Williams,	Mooresville,	Agr.
Owen Zelotes Wrenn,	Durham,	C. E.
Clem Covenington Yarbrough,	Locust Hill,	M. E.

Freshman Class.

Calvin Monroe Adams,	Statesville,	Agr.
Henry Milton Alexander,	Matthews, R. 17,	E. E.
Lewis Carroll Atkisson,	Greensboro,	Tex.
Earle Axley,	Statesville,	Chem.
Granville Vernon Baum,	Norfolk, Va.,	E. E.
Mills Eure Bell,	Wilmington,	C. E.
Beverly Moss Blount,	Washington,	E. E.
James Franklin Brawley,	Mooresville,	Agr.
Harry Eskridge Brooks,	Sunbury,	Chem.
Ralph Brooks,	Alliance,	Tex.
Joseph Brandon Bruner,	Raleigh,	Agr.
Walter Frederick Bulla,	Asheboro,	Agr.
Lingurn Skidmore Burkhead,	Whiteville,	C. E.
William Buchanan Calhoun,	Laurinburg,	Agr.
John Cline Carpenter,	Charlotte, R. 12,	C. E.
John Mann Carter,	Washington,	E. E.
Louis Gorham Cherry,	Raleigh,	E. E.
Ambrose Schenck Cline,	Lincolnton, R. 2,	Agr.
George Dewey Collier,	Goldsboro,	C. E.
Lester Durrett Coltrane, Jr.,	Concord,	E. E.
Guy Winston Commander,	Elizabeth City,	Agr.
Henry Bacon Constable,	Charlotte,	E. E.
Augustus Buell Cooke,	Littleton,	E. E.
Edward Livingston Cotton,	New London,	M. E.
Clifford Cox,	Richlands,	Agr.
Raymond Crowder,	Raleigh,	E. E.
Eugene Gooch Currin, Jr.,	Durham,	Agr.
Hosea Curtice,	Raleigh,	Agr.
Dallas Daily,	Elizabeth City,	C. E.
Richard Kelly Davenport, Jr.,	Mount Holly,	Agr.
Samuel Frederick Davidson,	Swannanoa,	Agr.
Leonidas Polk Denmark,	Raleigh,	E. E.
Herbert Jennings Dockery,	Wadesboro,	E. E.

Name.	*Post Office.*	*Course.*
AUBREY CLAYTON DOGGETT,	Brown Summit,	M. E.
ROBERT BRUCE DONALDSON,	Charlotte, R. 8,	Agr.
LANDON ANDERSON DOUB,	Clayton, R. 2,	Agr.
CHARLES PATTERSON ELDRIDGE,	Raleigh,	C. E.
WILLIAM KING ELDRIDGE,	Burkeville, Va.,	M. E.
WILLIAM RAIFORD EWING,	Manchester,	Agr.
WILLIAM DEVANE FAISON,	Faison.	Agr.
WILLIAM HERBERT FARMER,	Bailey,	Agr.
RUTLEDGE HUGHES FEILD,	Raleigh,	Agr.
ROLAND FIELDS,	LaGrange,	Agr.
WHEELER MARTIN FIELDS,	LaGrange, R. 4,	Agr.
JULIAN JUDSON FLEETWOOD,	Hertford,	Agr.
AARON CONARD FLUCK,	Lexington,	E. E.
HERSEY CECIL FOREHAND,	South Mills,	E. E.
LOUIS WILLIAM GARDNER,	Shelby,	E. E.
WILLIAM HOWARD GASKILL, JR.,	Morehead City,	C. E.
WALTER ALEXANDER GIBSON,	Richmond, Va.,	C. E.
PETER MELVIN GILCHRIST,	Laurinburg, R. 4,	M. E.
CHARLES ERDMAN GRANTHAM,	Fairmont. R. 3,	M. E.
FRANK TEMPLE GRAY,	Cullasaja,	M. E.
WILLIAM TULL GRIMSLEY,	Greensboro,	Chem.
JAMES HOLMES HADDOCK,	Richmond, Va.,	C. E.
JOHN HUBBARD HALL, JR.,	Raleigh,	Agr.
HARRY EARL HAMILTON,	Raleigh,	Chem.
ROBERT WILLIAMS HAMILTON, JR.,	Jonesville, S. C.,	Agr.
DREW SUGG HARPER,	Snow Hill,	Agr.
JOHN FLEMING HARRIS,	Mapleville, R. 1,	Agr.
RUSSELL PEYTON HARRIS,	Louisburg,	Agr.
HENRY MERCER HARSHAW,	Murphy,	E. E.
JAMES LAFAYETTE HASSELL,	Edenton,	Agr.
RONDO K. HATTON,	Charlestown, W. Va.,	C. E.
JOSEPH ALFRED HELMS,	Unionville,	E. E.
HARRY BENJAMIN HENDERLITE,	Raleigh,	E. E.
GEORGE GARLAND HENDRICKS, JR.,	Greensboro,	C. E.
VERNON RAY HERMON,	Conover, R. 1,	Agr.
DAVID LEE HOOPER,	Cullowhee,	M. E.
HERNDON HOPKINS,	Greensboro,	Agr.
JOHN STUART HOWARD,	Salemburg,	Agr.
WILLIAM STEVENS HOWELL,	New Bern,	Agr.
JESSE FRANK HUETTE,	Thomasville,	M. E.

Name.	*Post Office.*	*Course.*
James Herbert Humphrey,	Shannon, R. 1,	Agr.
Tracey Walsh Huntley,	Charlotte, R. 1,	M. E.
Samuel O'Kelley Ireland,	Elon College, R. 1,	Agr.
Lona Alvin Jaynes,	Fonta Flora,	M. E.
George Linwood Jeffers,	Richmond, Va.,	E. E.
Vernon Junius Johnson,	Hendersonville, R. 5,	M. E.
Raymond Allen Jones,	Charlotte,	C. E.
Charles Marvin Kanoy,	Biscoe,	E. E.
John David Kernodle, Jr.,	Graham,	E. E.
Waverly F. Kilpatrick,	Asheville,	Agr.
Robert Vernon Knight,	Tarboro, R. 1,	Agr.
Fred. Henry Knowles,	Wallace, R. 1,	Agr.
William Closs Knox,	Town Creek,	Agr.
Marvin Burke Koonce,	Richlands,	Agr.
Frank Kipp Kramer,	Elizabeth City,	M. E.
Craven Earl Lee,	Newton Grove,	Chem.
Hugh Shaw Lee,	Raleigh,	C. E.
Irvin Tracy Lewis,	Gastonia, R. 2,	Agr.
Jesse Webb Lindley,	Siler City,	Agr.
Risden Tyler Bennett Little,	Wadesboro,	Agr.
Donald Grattan McArn,	Laurinburg,	E. E.
Leewood McCallum,	Rowland,	Agr.
James Alexander McColman,	Gibson,	Agr.
Haddon Spurgeon Mackie,	Granite Falls,	M. E.
Angus Blue McKinnon,	Laurinburg,	Agr.
Malcolm Lee McLeod,	Maxton,	Agr.
James Alexander McPherson,	Cameron,	M. E.
James Ambrose Madison,	Cullowhee,	Agr.
Robert Edward Madison,	Cullowhee,	E. E.
Pierre Mallett,	Etowah,	M. E.
Rufus Alexander Malloy,	Raleigh,	C. E.
William Daniel Martin,	Pelham,	M. E.
John Daniel Miller,	New London,	C. E.
George Harold Nash,	Durham,	M. E.
Robert Timberlake Newcomb,	Raleigh,	Agr.
Herbert Burns Norris,	Raleigh,	M. E.
Carl Osborne,	Cleveland Mills,	C. E.
Reid Allison Page,	Biscoe,	Agr.
Robert Logan Patton, Jr.,	Morganton,	C. E.
Oscar Pearsall, Jr.,	Wilmington,	Agr.

Name.	*Post Office.*	*Course.*
William Victor Pearsall,	Wilmington,	Chem.
Thomas Clayton Pegram,	Asheville, R. 4,	Tex.
John Gay Pinner,	Columbia, R. 1,	Agr.
Frank Wilson Proctor,	Raleigh,	E. E.
Carl Clawson Proffitt,	Bald Creek,	Agr.
Harry Wilson Rankin,	Concord, R. 2,	Agr.
George William Rawlins,	Raleigh,	Tex.
John Duncan Ray,	Sanford,	Agr.
Thomas Jefferson Reeves	Canto,	Agr.
Leroy Leo Roberson,	Robersonville,	E. E.
Chauncey Hardwick Roberts,	Fletcher,	Agr.
John Morgan Roberts,	Louisville, Ga.,	Agr.
John Paul Robertson,	Rowland,	Agr.
Fred. Lee Roland,	Casida,	M. E.
Landon Coats Rosser,	Jonesboro, R. 1,	E. E.
Lindley Murrey Rowe,	Burgaw,	C. E.
Brooks Walker Setzer,	Troutman,	E. E.
John Franklin Smith,	Wilmington,	C. E.
Walter Johnston Smith, Jr.,	Charlotte,	Agr.
Paul Elwood Snead,	Reidsville,	E. E.
Joseph McKay Spears,	Lillington,	C. E.
James Lennie Stephens,	Holly Springs, R. 2,	Agr.
John Woroe Stephens,	Leasburg,	Agr.
Pelham Marion Stocton,	Charlotte, R. 3,	Agr.
Wilbur Sumner,	Asheville,	E. E.
Banks Cooper Talley,	Statesville,	Agr.
Daniel McGilvary Tate,	Littleton,	Agr.
Jesse Ernest Trevathan,	Rocky Mount, R. 1,	Agr.
George Eugene Trust,	East Arcadia,	E. E.
Charles Henry Wadsworth,	Concord,	Agr.
Will Miller Watson,	Swan Quarter,	E. E.
Elbridge Lee Weathers,	Shelby, R. 5,	Agr.
Charles Wright Weaver,	Franklin, R. 1,	M. E.
Buxton White,	Elizabeth City,	Agr.
Leonard White, Jr.,	Statesville,	C. E.
Don Clair Whitley,	Albemarle,	Agr.
George Whitson,	Swannanoa,	E. E.
Rassie Ewert Wicker,	Pinehurst,	C. E.
Fred. Carl Wiggins,	Middleburg,	E. E.
John Bynum Wiggins,	Sunbury,	Agr.

Name.	*Post Office.*	*Course.*
Stephen Vance Wilkins,	Rose Hill, R. 1,	Agr.
Edgar Donald Williams,	Greensboro, R. 3,	Agr.
John Rodman Williams,	Sanford,	C. E.
Marshall McDiarmid Williams, Jr.,	Faison,	M. E.
John Wilds Wilson,	Johnson City, Tenn.,	Tex.
Henry Kollock Witherspoon,	Greensboro,	E. E.
Moses Washington Woodard, Jr.,	Raleigh,	Chem.
Lester Donald Wooten,	LaGrange,	Agr.
Edwin S. Wright,	Boardman,	Chem.

Irregular.

Barnette William Allen,	Creedmoor,	Nor'l.
Davis Aydelette Robertson,	Portsmouth, Va.,	Agr.
William Alexander Smith,	Raleigh,	Agr.
Arch Columbet Yow,	Greensboro,	Agr.

TWO-YEAR COURSES.

First Year.

William Crocker Albright,	Mount Airy,	M. A.
Lea Sanders Albritton,	Kinston,	Tex.
Walter Holt Bell,	Morehead City,	M. A.
Ralph Martin Caldwell,	Campobello, S. C.,	M. A.
Henry Quinn Covington,	Laurinburg,	M. A.
Robert Wylie Dail,	Kinston,	M. A.
William Allen Darden, Jr.,	Ayden, R. 1,	M. A.
Archie Scherrer Deal,	Spencer,	M. A.
John Hulon Dunn,	Scotland Neck,	M. A.
Henry Grady Farthing,	Boone, R. 1,	M. A.
Bion Formyduval,	Whiteville,	M. A.
Fred. Harlee Freeze,	Mooresville,	M. A.
Frederick Charles Geese,	Norfolk, Va.,	M. A.
Clarence Augustus Hasty,	Maxton, R. 1,	M. A.
Charles Haywood Haughton,	Mount Airy,	M. A.
William Stephen Haywood,	Mount Gilead,	M. A.
Richard Seawell Hinton,	Raleigh,	M. A.
Dean Roney Holt,	Graham,	M. A.
Thomas Jefferson Ingram,	Wadesboro,	M. A.
Sidney Earle Jennette,	Lake Landing,	M. A.
Rangwald Oliver Johnson,	Southport,	M. A.

Name.	*Post Office.*	*Course.*
Fitzhugh Currie Jones,	Red Springs,	M. A.
Russell Henderson Kale,	Mount Holly,	Tex.
Luther William Kidd,	Rhodhiss,	M. A.
Robert Bruce Lennon,	Skyco,	M. A.
Charles Dennis Loane,	Charlotte,	M. A.
Charles Johnson McLeod,	Biscoe, R. 1,	M. A.
Frank Judson Mixon,	Washington,	M. A.
Thomas Jerry Moody,	East Laporte,	M. A.
James Gaston Murray,	Fairfield,	M. A.
Rufus Gwyn Parlier,	Ronda,	M. A.
George Fletcher Pate,	Gibson, R. 1,	M. A.
Thomas Carlyle Pate,	Gibson,	M. A.
Jere. Pearsall,	Dunn,	M. A.
Joseph Williams Peden,	Wilkesboro,	M. A.
Asa Gray Phelps,	Merry Hill,	M. A.
Lenox Daniel Rawlings,	Wilson,	M. A.
Penn Carrigan Scott,	Greensboro,	Tex.
Clem Oscar Seifert,	New Bern,	M. A.
Paul Dunston Smith,	Merry Hill,	M. A.
Bruce Strowd,	Chapel Hill,	M. A.
John Ralph Watson,	Portsmouth, Va.,	M. A.

Second Year.

Wiley Gray Johnson,	Germanton, R. 1,	M. A.
Durwood Belmont Kearney,	Franklinton,	M. A.
Charles Duncan McIver,	Greensboro,	Tex.
Albert Caldwell Morrison,	Charlotte,	M. A.
Fred. Murray Poyner,	Moyock,	M. A.
Clarence Elmer Stone,	Pinnacle,	M. A.
William Cobb Toler,	Goldsboro,	M. A.

ONE-YEAR COURSE IN AGRICULTURE.

Henry Howard Bass,	Latta, S. C.
Henry Perrine Bilyeu,	Southern Pines.
Roy Luren Bowman,	Liberty.
Lemuel Redmond Broome,	Kinston.
Gordon McGregor Cameron,	Manly.
Herbert Lewis Darden,	Wilmington.
Howard Donovan,	McIver.
Jarrell Donovan,	McIver.

Name.	*Post Office.*
Willie Hight DuVal,	Pollocksville, R. 1.
Robert Samuel Edmiston,	Mount Ulla.
Burgess Wood Gaither,	Hertford.
Benjamin Frank Gaitley,	Rowland.
Simmons Ab Gandy,	Darlington, S. C.
Grey Cabe Garriss,	Pikeville, R. 2.
Wilton Ralph Gurley,	Goldsboro, R. 1.
Richard Watts Harris,	Stem.
Albert Pearson Hoeffer,	Hammonton, N. J.
Walter Montague Hooker, Jr.,	Aurora, R. 2.
William R. Hoots,	Jennings.
Ewen Addison Howard,	St. Pauls.
Gilmer Hughes,	Jackson.
Braxton Fletcher Johnson,	Rose Hill.
James Troy King,	St. Pauls, R. 1.
Charles Lampson Lehmann,	New York, N. Y.
John Duncan McArthur,	Parkton, R. 1.
Leroy Baxter Miller,	Rowland, R. 2.
Sim Aaron Nathan,	Wilmington.
Ed. Spear Phillips,	Ingalls.
Alfred Rowland Pittman,	Fairmont.
Ira Clayton Robinson,	Clinton, R. 2.
Clinton Seawell,	Carthage, R. 1.
Peter Evans Shields,	Scotland Neck.
Herbert Spencer,	National Soldiers' Home, Va.
John Alexander Stilwell,	Charlotte, R. 3.
Grady Lee Stroup,	Gastonia, R. 2.
William Craton Walters,	Barnesville, R. 1.
Jesse Burns Ward,	Rowland.
William Miles Wells, Jr.,	Wilson.
Edmund Harmon Willcox,	Carthage, R. 4.
Dan Arthur Willey,	Gates.

WORK COURSE—AGRICULTURE.

John Baines,	Spring Hope, R. 1.
James O. Brantley,	Spring Hope, R. 1.
John Milnor Camp,	Rutherfordton, R. 2.
Lionel Tennyson Daniels,	Oriental.
Foy Fisher,	Concord.
Edgar Lee Griffith,	Charlotte, R. 2.

Name.	*Post Office.*
John Henry Hardin,	Waynesville, R. 3.
Malcolm Person Hoover,	Woodleaf.
Warren Mewborn Laughinghouse,	Grifton, R. 1.
Isaac Chauncey Meekins, Jr.,	Manteo.
Harry Parks Norman,	Oxford, R. 3.
William Arthur Pruitt,	Thomasville.
John White Ramseur,	Kings Mountain.
Charles Compton Richardson,	Snow Camp.
William Elmon Rowland,	Willow Springs.
Robert Jorden Blythe Secrest,	Waxhaw.
Oscar Darius Seitz,	Newton.
Adlai Clingman Shuford,	Barnardsville.
Roy Davis Underwood,	Salemburg.
Marion Dare Wetmore,	Woodleaf.
Lyman Abbott White,	Salemburg.

WINTER COURSE—AGRICULTURE.

William Johnston Andrews,	Raleigh.
Dallas Malone Anderson,	Burlington.
Martin Clinton Auman,	Seagrove.
Berton Haywood Berry,	Swan Quarter.
John Henry Bost,	Rockwell.
William Buell Boschen,	New York, N. Y.
Victor Bullard,	Fayetteville.
Herbert Stanley Clark,	Manchester.
Charles Ransom Emry,	Weldon.
James Otis Evans,	Greenville.
Carson Maxwell Fisher,	Rockwell.
Horace Cleveland Futrell,	Rich Square.
Benjamin Harrison Gurley,	Old Fort.
Seth Blount Harris,	Swan Quarter.
Andrew Grant Hendren,	Straw.
Henry White Jessup,	Rich Square.
Russell Monroe Kee,	McAdenville.
Robert Nuton Looper,	Samarcand.
James Baity McKeithan,	Regan.
Andrew Jackson May,	Reese.
Robert Lee Neal,	McIver.
Oscar Hugh Phillips,	Salisbury.
Sam Lester Phillips,	Trinity, R. 1.

Name.	*Post Office.*
George Geben Reese,	Reese.
Willie Ephird Rhyne,	Mount Holly.
Bascom Lee Richardson,	Randleman.
Arthur Whitney Rose,	Beasley.
Clifton Pendleton Sawyer,	Weeksville.
Adam Henry Scott,	Winston-Salem, R. 3.
Jack Sharpe,	Statesville.
George Reese Sherrill,	Reese.
Earlie Wright Smith,	Willow Springs.
Willie Langdon Stallings,	Spring Hope.
Howard Alva Thacker,	Winston-Salem.
Brac Milton Weston,	Swan Quarter.
Jethro Wilson,	Reese.

WINTER COURSE—TEXTILE.

Seabury Treadwell Daniel,	Wilson.

MAY SCHOOL FOR TEACHERS.

Name.	*Address.*
Mamie Arbold,	Cameron.
Patrick Benton Lamm,	Lucama.
Carey Clyde Branson,	Burlington, R. 7.
Sarah Elizabeth Bledsoe,	Raleigh.
Annie Laura Bryan,	Moncure.
Ollie Anna Cook,	Concord.
Oscar Creech,	Castalia.
Carey Estelle Dorsette,	Siler City.
Christine Dowd,	Wallace.
James Edward Dowd,	Wallace.
Lucy Francis Edwards,	Elm City, R. 3.
Elvira Worth Foust,	Mt. Vernon Springs.
Ardee Leslie Graham,	Mt. Gilead.
Ernest Leland Green,	Lucama.
Maud Harris,	Garysburg.
Laura Olivia Huff,	East Bend.
Myra Lewis Hunter,	Raleigh.
Augusta Lemons,	Reidsville, R. 2.
Kenneth Henry McIntyre,	Holly Springs.
Flossie Belle McLean,	Eagle Springs.
Thaddeus Matthews,	Cardenas.
Paul Harris Nance,	Rocky Mount.
Annie Pearle Parker,	Knightdale, R. 1.
Minor Richardson,	Neuse.
Julia Margaret Rosey,	Pine Bluff.
Maggie Smith,	Maxton.
Sallie Campbell Smith,	Maxton.
Lydia Sorrell,	Raleigh, R. 6.
Anna Christine Stutts,	Eagle Springs.
Sallie Smith Wall,	Stoneville, R. 1.
Joseph Adolphus Williams,	Spencer.
William Larkin Winkler,	Lenoir.

SUMMARY.

By Classes.

Graduate	10
Senior	62
Junior	66
Sophomore	136
Freshman	162
Short Courses:	
Mechanic Arts, 2 years	45
Textile, 2 years	4
Agricultural, 1 year	40
Agricultural, irregular	3
Agricultural, work, 2 years	21
Agricultural, winter, 7 weeks	36
Agricultural Normal, 1 year	1
Textile, winter	1
May School, 2 weeks	32
Total	619

By Courses.

Agricultural, including short courses	293
Chemical	27
Civil Engineering	77
Mechanical Engineering, including Mechanic Arts	106
Electrical Engineering	90
Textile, including short courses	26
Total	619

TWENTY-SECOND ANNUAL COMMENCEMENT

MAY 30, 1911.

DEGREES CONFERRED.

BACHELORS OF SCIENCE.

In Agriculture.

John Mann Beal,
Joel Edward Brown,
James Howard Brown,
Henry Roy Cates,
John Ivey Eason,
Robert Walter Graeber,
Fred. Taylor Peden,
Josephus Plummer Quinerly,
George Romulus Ross,
James Morgan Sherman,
Walter Booker Winfree.

In Chemistry.

Charles Edward Bell,
Edwin Sexton Dewar,
Charles McKimmon, Jr.
James Hunter Watson.

BACHELORS OF ENGINEERING.

In Civil Engineering.

John Benjamin Bray,
William Bachman Brown,
Guy Kedar Bryan,
Kit Bryan,
Thomas Devin Harris,
Jacob Lee Martin,
Robert Lee Morrison,
Charlie Augustine Speas,
Fred. Goode Tucker.

In Electrical Engineering.

William Bailey,
William Hurd Davis,
Elmo Vernon Freeman,
George William Gillette,
John Taylor Peden, Jr.
Paul Nathaniel Pittenger,
John Wesley Rollinson,
Graeme Ross,
Lucius Esek Steere, Jr.
Edwin Thomas Wadsworth.

In Mechanical Engineering.

Von Porter Byrum,
Henry Caleb Clay,
Ira Short,
Orin Morrow Sigmon,
Thomas Whitmell Thorne,
Marion Fuller Wyatt.

In Textile Industry.

Tollie Chester Barber,
David Raymond Hinkle,
Eugene Richard McCracken,
Lloyd Hurst Swindell.

Louis Reinhold Detjen, Course in Agriculture, Master of Science.
Frank Webber Sherwood, Course in Chemistry, Master of Science.

HONORS.

HONORS IN SCHOLARSHIP.

For Four Years.

C. E. Bell,
J. H. Brown,
R. W. Graeber,
J. P. Quinerly.

FOR 1910-1911.

Senior Class.

J. M. Beal,
C. E. Bell,
J. H. Brown,
W. B. Brown,
Kit Bryan,
H. R. Cates,
R. W. Graeber,
T. D. Harris,
F. T. Peden,
J. T. Peden, Jr.
P. N. Pittenger,
J. P. Quinerly,
G. R. Ross,
Graeme Ross.

Junior Class.

McNeely DuBose,
N. G. Fetzer,
T. F. Gibson,
R. M. Hardison,
R. W. Howell,
J. G. Kellogg,
J. E. McGee,
W. R. Mann,
L. N. Riggan,
F. B. Sherwood,
O. W. Smith,
A. W. Taylor,
H. L. Taylor.

Sophomore Class.

E. D. Bowditch,
H. B. Briggs,
C. E. Brown,
J. B. Coward,
P. D. Davis,
C. F. Gore,
F. S. Hales,
L. C. Hand,
T. R. Hart,
T. J. Hewitt,
R. T. Melvin,
T. K. Mial,
W. D. Simpson,
F. C. Smith,
W. H. Sullivan,
A. C. Wilson.

Freshman Class.

B. O. Austin,
C. R. Bailey,
H. Von Biberstein,
E. C. Blair,
V. W. Breeze,
J. R. Buchanan,
E. L. Cloyd,
L. M. Craige,
K. M. Fetzer,
James Fontaine,
Morris Liferock,
M. L. Liverman,
H. K. Nash, Jr.
P. H. Park,
M. R. Quinerly,
J. B. Rees,
D. E. Roberts,
W. H. Smith,
D. W. Thorp,
J. R. Townsend,
E. W. Waldroup,
O. Z. Wrenn.

First-year Textile.

J. S. Pickett.

One-year Course in Agriculture.

J. Deal, C. L. Rhyne, S. V. Wilkins.

Work Course in Agriculture.

J. S. Barnard,
W. R. O'Briant,
Ralph Sharpe,
J. B. Wethington.

Honors for Punctuality.

B. O. Austin,
C. A. Bache,
J. S. Barnard,
G. W. Brice,
J. R. Buchanan,
H. Burleson,
W. G. Caldwell,
W. R. Clements,
T. J. Croom,
E. M. Deaton,
R. C. Dixon,
T. F. Eaton,
J. B. Fearing,
F. S. Hales,
R. M. Hardison,
F. O. Hartshorn,
R. W. Higgins,
L. John,
G. E. Kidd,
C. J. Lambeth,
C. W. Lee,
E. G. Lee,
A. Lytch,
F. W. McComb,
J. E. McGee,
J. E. McNeely,
A. McNeill,
T. K. Mial,
F. G. Pate,
Oscar Pearsall,
C. L. Rhyne,
F. L. Roland,
E. P. Rouse,
J. E. Scott,
Ramah Sitterson,
F. C. Smith,
O. W. Smith,
J. A. Stilwell,
C. E. Stone,
A. W. Taylor.
H. L. Taylor,
R. G. Thomas,
C. L. Underwood,
E. W. Waldroup,
J. B. Wethington,
H. P. Whitted,
H. J. Wilkinson.

Medals Awarded.

National Association of Cotton Manufacturers, D. R. Hinkle.

Graduating Oration.

J. P. Quinerly.

REGISTER OF ALUMNI.

Name.	*Degree.*	*Address.*
Durant Stewart Abernethy,	B.E. 1906,	Lynchburg, Va.
	Resident Engineer, Southern Ry.	
Leroy Franklin Abernethy,	B.Agr. 1905,	Hickory, N. C.
	Abernethy Hardware Co.	
Nelson Adams,	B.E. 1904,	McColl, S. C.
	Farmer.	
Haywood Lewis Alderman,	B.E. 1904,	High Point, N. C.
	Division Superintendent in Operating Department, Southern Power Co.	
Kemp Alexander,	B.E. 1900,	Asheboro, N. C.
	Superintendent Acme Hosiery Mills.	
William Davidson Alexander, Jr.,	B.S. 1899,	Charlotte, N. C.
	Engineer Mecklenburg Drainage Commission.	
Daniel Allen,	B.S. 1896,	Raleigh, N. C.
	Farming and Real Estate.	
George Gilderoy Allen,	B.E. 1906,	Cooleemee, N. C.
	Overseer of Dyeing, Erwin Cotton Mills.	
Leslie Lyle Allen,*	B.E. 1900,	Spartanburg, S. C.
	Cotton Merchant.	
Robert Wilson Allen,	B.E. 1893,	Sanford, N. C.
	Superintendent of Schools.	
John Camillus App,	B.S. 1908,	Charleston, W. Va.
	Real Estate, Insurance.	
John Allen Arey,	B.S. 1909,	Elmwood, N. C.
	M.S., 1910. Farmer.	
Dorsey Frost Asbury,*	B.S. 1898,	Washington, D. C.
	Leading Ordnance Draftsman, U. S. Naval Gun Factory.	
George Page Asbury,	B.E. 1906,	Washington, D. C.
	Draftsman U. S. Naval Gun Factory.	
Samuel Erson Asbury,	B.S. 1893,	College Station, Tex.
	M.S., 1896. Assistant State Chemist.	
Sydney Woodward Asbury,	B.E. 1904,	Charlotte, N. C.
	Heating Engineer, American Machine and Manufacturing Co.	
Thomas Martin Ashe,†	B.E. 1895,	Raleigh, N. C.
Robert James Avery,*	B.Agr. 1905,	Church Hill, Tenn.
	Superintendent Steam Shovel, Holston River Railway Co.	

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*Not heard from this year. †Deceased.

Name.	*Degree.*	*Address.*	
Robert Kenneth Babington,	B.E. 1910,	Gastonia, N. C.	Engineering Department, Piedmont Telephone and Telegraph Co.
Oscar Luther Bagley,	B.S. 1905,	Weldon, N. C.	Manager Coca-Cola Bottling Works.
Eugene Cleveland Bagwell,	B.E. 1904,	Portsmouth, Va.	Chief Engineer's Office, Seaboard Air Line Ry.
Edward Par Bailey,	B.E. 1904,	Wilmington, N. C.	President Wilmington Iron Works.
William Bailey,	B.E. 1911,	Raleigh, N. C.	Carolina Power and Light Co.
Frank Oscar Baldwin,*	B.S. 1908,	Saltville, Va.	Chemist Mathieson Alkali Works.
William Herbert Doughty Banck,*	B.E. 1909,	Havana, Cuba.	Junior Engineer, U. S. Engineer's Office.
Ira Wilson Barber,	B.S. 1899,	Mount Airy, N. C.	Superintendent Electric Light and Power Plant and Waterworks.
James Claudius Barber,	B.E. 1904,	Barber, N. C.	Farmer.
Tollie Chester Barber,	B.E. 1911,	Caroleen, N. C.	Henrietta Mills.
William Walter Barber,	B.E. 1904,	Barber, N. C.	Farmer.
Fletcher Hess Barnhardt,	B.E. 1901,	Phœnixville, Pa.	Heine Safety Boiler Co.
William Alexander Barrett,*	B.E. 1904,	Missoula, Montana.	Electrical Engineer, Missoula Light and Water Co.
George Francis Bason,	B.E. 1908,	Ampere, N. J.	Specification Department, Crocker-Wheeler Co.
Herbert Scandlin Battie,	B.E. 1907,	Steelton, Pa.	Resident Engineer, Pennsylvania Steel Co.
John Mann Beal,	B.S. 1911,	Agr. College, Miss.	Instructor in Botany, Miss. Agricultural and Mechanical College.
James Claudius Beavers,	B.Agr. 1906,	Lafayette, Ind.	Dept. of Soils and Crops, Purdue Agricultural Experiment Station.
Sidney Hamilton Beck,*	B.S. 1898,	Washington, D. C.	Marine Engine and Boiler Draftsman, Navy Department.
John Leland Becton,	B.E. 1908,	Wilmington, N. C.	Humphreys, Becton & Allen, Civil Engineers.
Harwood Beebe,	B.E. 1908,	Spies, N. C.	Farming and Milling.

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*Not heard from this year.

Name.	*Degree.*	*Address.*
Charles Edward Bell,	B.S. 1911,	Raleigh, N. C.
Assistant Food Chemist, N. C. Department of Agriculture.		
Needham Eric Bell,	B.S. 1906,	Montgomery, Ala.
Soil Surveyor, State of Alabama.		
William Osborne Bennett, Jr.,	B.E. 1901,	Maxton, N. C.
Manager Elbe Manufacturing Co.		
Robert Linn Bernhardt,	B.S. 1900,	Salisbury, N. C.
Secretary-Manager Salisbury Hardware and Furniture Co.		
Leslie Graham Berry,	B.E. 1900,	Charlotte, N. C.
Manager Southern Engineering Co.		
John Henderson Birdsong,	B.S. 1899,	Chicago, Ill.
Chief Chemist and Metallurgist, The National Malleable Castings Co.		
Joe Pittman Bivens,	B.E. 1907,	New York, N. Y.
Engineering Department, New York and Queens Electric and Power Co.		
James Adrian Bizzell,	B.S. 1895,	Ithaca, N. Y.
M.S., 1900. Ph.D., Cornell Univ. Assistant Prof. Soil Technology, N. Y. State College of Agriculture.		
Fred. McCullough Black,	B.E. 1910,	Wilkinsburg, Pa.
Engineering Apprentice Westinghouse Electric and Manufacturing Co.		
Kenneth Leon Black,	B.E. 1906,	Richmond, Va.
Superintendent and Engineer, I. J. Smith & Co., Inc.		
William Lamar Black,	B.E. 1908,	Charlotte, N. C.
Southern Power Co.		
John Isham Blount,	B.E. 1895,	Birmingham, Ala.
C.E., 1897. Owner J. I. Blount & Co., and The Blount Specialty Co.		
William Morton Bogart,	B.E. 1903,	Dallas, Tex.
Chief Engineer, General Fire Extinguisher Co. of Texas.		
Thomas Sawyer Bond,	B.E. 1910,	Estacion Buenavista, Mexico, D. F.
Assistant Engineer of Location, National Railways of Mexico. Home Address, Windsor, N. C.		
Leslie Norwood Boney,	B.E. 1903,	Florence, S. C.
Architect.		
Fred. Wilhelm Bonitz,	B.E. 1901,	Wilmington, N. C.
Lawyer.		
Henry Emil Bonitz,	B.E. 1893,	Wilmington, N. C.
Architect.		
William David Boseman,	B.E. 1902,	Rocky Mount, N. C.
Farmer, with R. H. Ricks.		
Zolly Mosby Bowden,	B.E. 1901,	Mulberry, Fla.
Electrician, Florida Mining Co.		

Name.	*Degree.*	*Address.*
ROY BOWDITCH,	B.E. 1910,	Charlotte, N. C.
Operator, Southern Power Co.		
ASA GRAY BOYNTON,*	B.E. 1908,	Biltmore, N. C.
Landscape Engineer, Vanderbilt Estate.		
CARL RAY BRADLEY,	B.E. 1910,	St. Louis, Mo.
Motor Engineering Dept., Wagner Electric Manufacturing Co.		
JAMES WASHINGTON BRAWLEY,	B.S. 1895,	Greensboro, N. C.
Director of Agents, Southern Life and Trust Co.		
JOHN BENJAMIN BRAY,	B.E. 1911.	Raleigh, N. C.
Locating Department, Norfolk Southern R. R.		
THOMAS JOHNSON BREVARD,*	B.S. 1910,	St. Paul, Minn.
Twin City Transportation Co.		
BENJAMIN ALEXANDER BROOM,	B.E. 1905,	Lincoln, Neb.
Mechanical Inspector, Chicago, Burlington and Quincy R. R. Co.		
CECIL DEWITT BROTHERS,	B.E. 1909,	Ajuno, Michoacan, Mex.
National Railways of Mexico.		
BEDFORD JETHRO BROWN,	B.E. 1901,	Charlotte, N. C.
In charge of Meter Department, Southern Power Co.		
FRANK HAMILTON BROWN,	B.Agr. 1908,	Cullowhee, N. C.
Teacher of Science, Cullowhee Normal and Industrial School.		
JOEL EDWARD BROWN,*	B.S. 1911,	Pendleton, S. C.
JAMES HOWARD BROWN,	B.S. 1911,	West Raleigh, N. C.
Instructor in Zoology, N. C. College of Agriculture and Mechanic Arts.		
WILLIAM BACHMAN BROWN,	B.E. 1911,	Williamston, S. C.
Piedmont Traction Co.		
THOMAS KINCAID BRUNER,	B.E. 1910,	Biscoe, N. C.
Assistant Manager and Assistant Superintendent Francis Cotton Mills.		
CARNEY JOHN BRYAN,	B.E. 1907,	Panama City, Fla.
Wholesale Fish Dealer.		
JOHN HARVEY BRYAN,	B.E. 1908,	Wilkinsburg, Pa.
Sales Department, Westinghouse Machine Co.		
GUY KEDAR BRYAN,	B.E. 1911,	Key West, Fla.
Florida East Coast R. R., Key West, Fla.		
KIT BRYAN,	B.E. 1911,	Williamston, S. C.
Greenville, Spartanburg and Anderson Ry. Co.		
ELTON ELROY BUCK,*	B.E. 1910,	Hampton, Va.
JOSEPH SAMUEL BUFFALOE,	B.S. 1897,	Garner, N. C.
Physician.		
JOEL W. BULLOCK,*	B.Agr. 1905,	Dabney, N. C., R. 1.
Farmer.		

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*Not heard from this year.

Name.	*Degree.*	*Address.*
Walter Austin Bullock,	B.S. 1895,	Cayey, Porto Rico.
Superintendent Porto Rico Leaf Tobacco Company's Cayey Plantations.		
James Harry Bunn,*	B.E. 1900,	Henderson, N. C.
Superintendent Henderson Cotton Mills.		
William Bryant Burgess,	B.E. 1908,	Portsmouth, Va.
Electrical Draftsman, Government Navy Yard, Norfolk.		
William Andrews Buys,	B.E. 1906,	Belhaven, N. C.
Civil Engineer, The Interstate Cooperage Co.		
Von Porter Bryum,	B.E. 1911,	Charlotte, N. C.
Lindsay Ferguson Carlton,	B.E. 1907,	Wilkinsburg, Pa.
Westinghouse Electric and Manufacturing Co.		
John Samuel P. Carpenter,	B.E. 1903,	Cherryville, N. C.
Member Board of Directors and Superintendent Melville Manufacturing Co		
John William Carroll,*	B.S. 1897,	Wallace, N. C.
Physician.		
Robert Hill Carter,	B.E. 1907,	Corozal, Canal Zone.
Electrician, Isthmian Canal Commission.		
Henry Brozier Cartwright,	B.E. 1905,	Jacksonville, Fla.
Assistant Engineer, Seaboard Air Line Ry.		
Henry Roy Cates,	B.S. 1911,	Ithaca, N. Y.
Assistant Instructor and Student, Cornell University.		
Junius Sidney Cates,	B.S. 1902,	Richmond, Va.
M.Agr. 1904. Editor Southern Planter.		
William Miller Chambers,	B.E. 1905,	Maben, W. Va.
Payroll Clerk, W. M. Ritter Lumber Co.		
Mark Hopkins Chesbro,	B.Agr. 1906,	Claremont, Va.
Farmer.		
Connor Calhoun Clardy,	B.E. 1906,	Los Angeles, Cal.
Los Angeles Office, General Electric Co.		
Charles Edward Clark,	B.S. 1897,	Charlotte, N. C., R. 9.
County Commissioner of Agriculture, Mecklenburg Co.		
David Clark,	B.E. 1895,	Charlotte, N. C.
M.E. 1896, C.E. 1897. Owner and Editor Southern Textile Bulletin.		
James Duncan Clark,	B.S. 1906,	Tampa, Fla.
President Peninsular Paper Co. Manager Ingleside Orange Groves.		
John Washington Clark,	B.E. 1906,	West Durham, N. C.
Superintendent of Erwin Bleaching and Furnishing Plant.		
Thorne McKenzie Clark,*	B.E. 1909,	Greenville, S. C.
Resident Engineer, Piedmont Traction Co.		

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*Not heard from this year.

Name.	*Degree.*	*Address.*	
Walter Clark, Jr.,	B.E. 1903,	Raleigh, N. C.	Lawyer.
William Alexander Graham Clark,	B.S. 1897. M.E. 1899.	Washington, D. C.	Textile Expert to the Tariff Board, U. S. Government.
Samuel Herbert Clarke,	B.E. 1906,	Richmond, Va.	With H. Clarke & Sons.
Henry Caleb Clay,	B.E. 1911,	West Raleigh, N. C.	Neuse River Cotton Mills.
Wiley Theodore Clay,	B.E. 1906, M.E. 1909.	West Raleigh, N. C.	Instructor N. C. College of Agriculture and Mechanic Arts.
Robert Baxter Cochran,	B.E. 1902,	Norwood, Ohio.	Chief Inspector, Bullock Electric Manufacturing Co.
Anson Elikem Cohoon,	B.S. 1898,	Eugene, Oregon.	Forest Surveyor, U. S. Department of Agriculture.
John Eliot Coit,	B.Agr. 1903,	Riverside, Cal.	Assistant Professor of Pomology, University of California.
Paul Collins,	B.S. 1901,	New Haven, Conn.	Analytical and Consulting Chemist.
George Washington Corbett, Jr.,	B.E. 1895,	Currie, N. C., R. 2.	Corbett & Corbett, Saw and Planing Mills.
Summey Crouse Cornwell,	B.E. 1903,	Gastonia, N. C.	Civil Engineer, Solomon-Norcross Co., Civil Engineers, Atlanta, Ga.
Charles Edward Corpening,	B.E. 1894,	Lenoir, N. C., R. 3.	Farmer.
Lewellyn Hill Couch,	B.E. 1908,	Hamlet, N. C.	Southern Bell Telephone and Telegraph Co.
Walter Miller Cowles,	B.E. 1909,	San Francisco, Cal.	Chalmers Motor Co.
David Cox,	B.E. 1894,	Hertford, N. C.	County Surveyor and General Manager Yeopim Lumber Co.
Duncan Archibald Cox,	B.S. 1906,	Rowland, N. C.	Hardware Business.
William Pescud Craige,	B.S. 1901,	Marion, N. C.	
William Lois Craven,	B.E. 1901,	York, Pa.	Designer and Estimator, York Bridge Co.
Charles Lester Creech,	B.S. 1903,	Winston-Salem, N. C.	Sales Manager Spach Brothers Wagon Works.
Alexander Doane Cromartie,	B.Agr. 1906,	Garland, N. C.	Farmer.

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*Not heard from this year.

Name.	*Degree.*	*Address.*	
William Henry Crow,*	B.E. 1910,	Monroe, N. C.	Merchant and Farmer. Superintendent Electric Plant.
Felix Gray Crutchfield,*	B.E. 1901,	Winston-Salem, N. C.	Secretary and Treasurer Maynard-Crutchfield Co., Plumbers, etc.
Eugene English Culbreth,	B.E. 1903,	Raleigh, N. C.	Commercial National Bank.
Hugh McCullom Curran.	B.S. 1898,	Manila, P. I.	Forestry Service, Philippine Government.
Edwin Speight Darden,*	B.S. 1895,	Wilson, N. C.	Jones & Darden, Farmers and Warehousemen.
Walter Lee Darden,	B.E. 1903,	Portsmouth, Va.	Chief Draftsman, Seaboard Air Line Ry.
Joseph Frank Davidson,	B.E. 1909,	Milwaukee, Wis.	Electrical Testing, Allis-Chalmers Co.
George Maslin Davis,*	B.E. 1901,	Roanoke, Va.	Draftsman, Mechanical Engineer's Office, N. and W. Ry.
William Hurd Davis,	B.E. 1911,	Schenectady, N. Y.	General Electric Co.
William Earle Davis,	B.E. 1910,	East Pittsburg, Pa.	Westinghouse Electric and Manufacturing Co.
William Kearney Davis,	B.E. 1895,	Marion, S. C.	Superintendent Marion Manufacturing Co.
Claud Council Dawson,	B.E. 1908,	Morganton, N. C.	Overseer of Carding, Morganton Manufacturing Co.
Thomas Theodore Dawson,*	B.E. 1910,	Knight's Key, Fla.	Florida East Coast Railway.
William Samuel Dean,	B.E. 1909,	Concord, N. C.	Overseer of Carding, Locke Erwin Mills.
Lewis Reinhold Detjen,	M.S. 1911,	West Raleigh, N. C.	N. C. Agricultural Experiment Station.
Edwin Sexton Dewar,	B.S. 1911,	Mt. Pleasant, Tenn.	Assistant Chemist, E. L. Parker & Co.
Joseph Charles Dey,*	B.S. 1895,	New Orleans, La.	
Junius Franklin Diggs,	B.S. 1903,	Rockingham, N. C.	Planter and Merchant.
Carlton O'Neal Dougherty,	B.E. 1909,	North, S. C.	Farmer.
Fred. Atha Duke,	B.E. 1909,	Portsmouth, Va.	Civil Engineer, Seaboard Air Line Ry.

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*Not heard from this year.

Name.	*Degree.*	*Address.*	
James Leonidas Dunn,	B.S. 1910,	Scotland Neck, N. C.	Farmer.
Alvin Deans Dupree,	B.E. 1908,	Greenville, N. C.	Manager Insurance Department, H. A. White's Agency.
Raymond Rowe Eagle,	B.E. 1908,	New Bern, N. C.	Civil Engineer.
Minnic Luther Eargle,	B.Agr. 1908,	Columbia, S. C.	The Brady-Eargle Co., Real Estate.
John Ivey Eason,	B.S. 1911,	Stantonsburg, N. C.	Farmer.
Jacob Tatum Eaton,	B.Agr. 1907,	Thomasville, N. C.	Dairyman, Baptist Orphanage.
William Hunt Eaton,	B.S. 1909,	Raleigh, N. C.	State Dairyman, Department of Agriculture.
Latta Vanderion Edwards,	B.E. 1906,	Pullman, Wash.	Professor of Railroad and Highway Engineering, Washington State College.
Seba Eldridge,	B.E. 1907,	New York, N. Y.	Investigator Charity Organization Society
Timothy Eldridge,	B.E. 1904,	Mount Olive, N. C.	Superintendent Electric Light Plant and Waterworks.
Theophilus Thomas Ellis,	B.E. 1903,	Henderson, N. C.	Farmer.
Weldon Thompson Ellis,	B.E. 1906,	West Raleigh, N. C.	M.E. 1908. Assistant Professor of Mechanical Engineering, N. C. College of Agriculture and Mechanic Arts.
Lee Borden Ennett,	B.S. 1895,	Cedar Point, N. C.	Superintendent of County Public Schools and Farmer.
Albert Edward Escott,	B.E. 1906,	Charlotte, N. C.	Secretary and Treasurer, The Mill News.
William Carlyle Etheridge,	B.Agr. 1906,	Ithaca, N. Y.	Graduate Student Cornell University, on leave from N. C. Experiment Station.
Benjamin Bryan Everett,	B.Agr. 1907,	Madison, Wis.	Graduate Student in Soils, University of Wisconsin.
James Beckett Ewart,	B.E. 1906,	Hawthorne, Ill.	Western Electric Co.
Ralph Ringgold Faison,	B.S. 1909,	Manila, P. I.	Lieutenant, Philippine Constabulary.
William Alexander Faison,	B.E. 1909,	Indiana Harbor, Ind.	Special Apprentice, American Steel Foundries.
Isaac Herbert Farmer,	B.E. 1908,	Sarasota, Fla.	Civil Engineer, Seaboard Air Line Ry.

Name.	*Degree.*	*Address.*	
James William Farrior,*	B.E. 1904,	Schenectady, N. Y.	General Electric Co., Testing Department.
William Dollison Faucette,	B.E. 1901,	New York, N. Y.	C.E. 1910. Chief Clerk to President Seaboard Air Line Ry.
Isaac Henry Faust,	B.E. 1895,	Ramseur, N. C.	Farmer and Contractor.
Benjamin Carey Fennell,	B.S. 1898,	Augusta, Ga.	M.E. 1900. Supt. Hankinson & Hagler, Manufacturing Vitrified Paving Brick.
James Lumsden Ferebee,	B.E. 1902,	Atlantic City, N. J.	Engineer, T. Chalkley Hatton, Drainage Construction.
Benjamin Troy Ferguson,	B.Agr. 1908,	Stantonsburg, N. C.	Farmer and Manager, Dr. S. H. Crocker.
John Daniel Ferguson,†	B.E. 1903,	Bladenboro, N. C.	
John Lindsay Ferguson,	B.E. 1907,	Corozal, Canal Zone.	Electrician, Isthmian Canal Commission.
Walter Goss Finch,	B.E. 1905,	Washington, D. C.	Junior Engineer, U. S. War Department.
William Walter Finley,	B.S. 1904,	No. Wilkesboro, N. C.	Breeder and Importer of Percheron Horses and Jersey Cattle.
Frank Fuller Floyd,	B.E. 1893,	Knoxville, Tenn.	Vice President and Sales Manager, Jellico Coal Mining Co.
Frank Lindsay Foard,	B.S. 1909,	Winston-Salem, N. C.	Reid Grocery Co.
Rufus Eugene Forbis,	B.E. 1910,	Charlotte, N. C.	Draftsman, Peter S. Gilchrist, Consulting Engineer.
Hugh Pierce Foster,†	B.E. 1903,	Person Co.	
Shirley Watson Foster,	B.Agr. 1906,	Washington, D. C.	Entomological Assistant, U. S. Department of Agriculture.
George Washington Foushee,*	B.E. 1904,	Greensboro, N. C.	Bookkeeper, Dicks Laundry Co.
Elias Van Buren Fowler,	B.E. 1907,	Glenville, N. C.	Merchant and Farmer.
Roscoe Loomis Fox,	B.E. 1909,	Kansas City, Mo.	Broker.
Francis Marion Foy,†	B.S. 1899,	Scott's Mill, N. C.	
Charles Duffy Francks,*	B.E. 1893,	Richlands, N. C.	Superintendent Richlands Graded Schools.

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*Not heard from this year.

†Deceased.

Name.	*Degree.*	*Address.*
George Stronach Fraps, Ph.D. Johns Hopkins University. State Chemist of Texas. Vice President Association of Official Agricultural Chemists.	B.S. 1896,	College Station, Tex.
Elmo Vernon Freemen, Apprentice Westinghouse Electric and Manufacturing Co.	B.E. 1911,	Wilkinsburg, Pa.
Percy Leigh Gainey, M.S. 1910. Instructor in Botany, University of Missouri.	B.Agr. 1908,	Columbia, Mo.
Edgar William Gaither, First Assistant Chemist, Ohio Agricultural Experiment Station.	B.S. 1904,	Wooster, Ohio.
James Jervey Gantt, Paving Inspector and Draftsman, City of Augusta.	B.E. 1910,	Augusta, Ga.
Junius Talmage Gardner, Shelby Insurance and Realty Co.	B.E. 1908,	Shelby, N. C.
Oliver Max Gardner, Lawyer.	B.S. 1903,	Shelby, N. C.
Clement Leinster Garner, United States Coast and Geodetic Survey.	B.E. 1907,	Manila, P. I.
Lewis Price Gattis,* Civil Engineer, Atlantic Coast Line R. R.	B.E. 1909,	Wilmington, N. C.
Edward Moore Gibbon,* Engineering.	B.E. 1893,	Jacksonville, Fla.
Nicholas Louis Gibbon, General Engineer, Leonard Tufts.	B.S. 1897,	Lakeview, N. C.
Seth Mann Gibbs,* Civil Engineer, Seaboard Air Line Ry.	B.E. 1908,	Jacksonville, Fla.
Lamar Carson Gidney, Superintendent Rutherfordton Light and Waterworks.	B.E. 1903,	Rutherfordton, N. C.
Lovic Rodgers Gilbert, Overseer Carding and Spinning, Caraleigh Mills Co.	B.E. 1907,	Raleigh, N. C.
Ransom Eaton Gill, General Electric Co.	B.E. 1910,	Pittsfield, Mass.
Roy Joseph Gill, Surveyor, Bureau of Lands, Insular Government.	B.E. 1907,	Manila, P. I.
George William Gillette, Assistant Superintendent Traction Department, Tidewater Power Co.	B.E. 1911,	Wilmington. N. C.
Maurice Mordecai Glasser,*	B.E. 1908,	Charleston, S. C.
John Howard Glenn,†	B.E. 1903,	Crowder's Creek, N. C.

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*Not heard from this year

†Deceased.

Name.	*Degree.*	*Address.*	
Charles Willis Gold,	B.S. 1895,	Raleigh, N. C.	Secretary and Superintendent of Agencies, Jefferson Standard Life Insurance Co.
Moses Henry Gold,	B.E. 1908,	Raleigh, N. C.	Civil Engineer, Seaboard Air Line Ry.
Albert Sidney Johnston Goss,	B.E. 1909,	Charlotte, N. C.	Staff of Assistant Chief Engineer Southern Power Co.
John David Grady,	B.Agr. 1908,	Resaca, N. C.	Farmer and Merchant.
Robert Walter Graeber,	B.S. 1911,	Raleigh, N. C.	Assistant Dairyman, N. C. Department of Agriculture.
Robert Strickler Graves,	B.E. 1907,	Cincinnati, Ohio.	Meter Specialist, General Electric Co.
Charlie Pool Gray,*	B.E. 1909,	Buxton, N. C.	Principal of Buxton Academy.
George Pender Gray,*	B.S. 1893,	Tarboro, N. C.	Commercial Traveler, Read Phosphate Co., of Nashville, Tenn.
James Miller Gray,	B.S. 1910,	Raleigh, N. C.	Assistant Director Farmers Institutes, N. C. Department of Agriculture.
Sterling Graydon,	B.E. 1905,	Charlotte, N. C.	Superintendent Atherton Mills.
Andrew Hartsfield Green, Jr.,	B.S. 1909,	Raleigh, N. C.	Commercial National Bank.
Marion Jackson Green,	B.S. 1896,	Charlotte, N. C.	Pattern-maker, The Cole Manufacturing Co.
Arthur Wynns Gregory,*	B.S. 1906,	Shanghai, China.	British-American Tobacco Co.
Paul Stirewalt Grierson,	B.E. 1904,	Newport News, Va.	Draftsman, Charles Cory & Son, New York.
James Perrin Gulley,	B.E. 1904,	Raleigh, N. C.	Traveling Salesman, Federal Gas Fixture Works, of Philadelphia.
Emil Gunter,*	B.E. 1903,	Boston, Mass.	Engineering Department, Edison Electric Illuminating Co.
Dorsey Yates Hagan,	B.E. 1908,	Greensboro, N. C.	Salesman, The American Tobacco Co.
Horace Lester Hamilton,	B.E. 1906,	Philadelphia, Pa.	Technical Writer, N. W. Ayer & Son.
William Roy Hampton,	B.S. 1909,	Plymouth, N. C.	Owner firm of W. H. Hampton & Son, Inc., Merchants and Bankers.

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*Not heard from this year.

Name.	*Degree.*	*Address.*
SAMUEL MERRILL HANFF,	B.S. 1900,	Duke, N. C.
Episcopal Clergyman.		
JOHN FREDERICK HANSELMAN,*	B.E. 1906.	Sheffield, Ala.
Northern Alabama Reduction Co.		
GEORGE ROM. HARDESTY,	B.E. 1907,	Goldsboro, N. C.
Chief Engineer, State Hospital.		
PHILIP WILLIAM HARDIE,	B.E. 1907,	Greensboro, N. C.
Surveyor.		
JARVIS BENJAMIN HARDING,*	B.E. 1904,	Mexico City, Mexico.
C.E. 1909. Reconnaissance Engineer, National Railways of Mexico.		
RICHARD HUGH HARPER,	B.S. 1905,	Patterson, N. C.
Gwyn-Harper Manufacturing Co.		
GEORGE ROLAND HARRELL,*	B.S. 1900,	Grasselli, N. J.
The Grasselli Chemical Co.		
JOHN WILLIAM HARRELSON,	B.E. 1909,	West Raleigh, N. C.
Instructor, N. C. College of Agriculture and Mechanic Arts.		
CEBURN DODD HARRIS,*	B.S. 1897,	Anchorage, Ky.
Assistant to President, Strater Brothers Tobacco Co.		
GORDON HARRIS,	B.E. 1909,	Schenectady, N. Y.
Lighting Engineering Department, General Electric Co.		
THOMAS DEVIN HARRIS,	B.E. 1911.	Williamston, S. C.
Transitman, Greenville, Spartanburg and Anderson Ry.		
WILLIAM HENRY HARRIS,	B.E. 1895,	Pawtucket, R. I.
M.E. 1896. Treasurer and Agent, Slater Manufacturing Co.		
FRANK HAWKS,	B.E. 1910.	Rocky Mount, N. C.
Special Apprentice, Atlantic Coast Line R. R.		
EDMUND BURKE HAYWOOD,	B.E. 1910,	Raleigh, N. C.
Norfolk Southern R. R.		
THOMAS FREDERICK HAYWOOD,	B.E. 1909,	Louisville, Ky.
Assistant Engineer, L. and N. R. R.		
JOKTON LAFAYETTE HEMPHILL,	B.E. 1907,	Schenectady, N. Y.
Commercial Engineer, General Electric Co.		
LEONARD HENDERSON,	B.E. 1909,	Raleigh, N. C.
Raleigh, Charlotte and Southern R. R.		
MAURICE HENDRICK,	B.E. 1903,	Cliffside, N. C.
Cliffside Mills.		
LAWRENCE JAMES HERRING,	B.Agr. 1907,	Wilson, N. C.
Practicing Veterinary Medicine. D.V.S. Kansas City Veterinary College.		

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*Not heard from this year.

Name.	*Degree.*	*Address.*
JERE. ISAAC HERRITAGE,* Surveyor and Timber Estimator, John L. Roper Lumber Co.	B.E. 1905,	Jacksonville, N. C.
CLARENCE WILSON HEWLETT, M.A. Johns Hopkins. Department of Terrestrial Magnetism, Carnegie Institution.	B.E. 1906,	Washington, D. C.
RUFUS WILLIAMS HICKS, JR., Draftsman, American Machine and Manufacturing Co.	B.E. 1910,	Greenville, S. C.
Bascombe Britt Higgins, M.S. 1910. Assistant and Graduate Student in Botany, Cornell University.	B.S. 1909,	Ithaca, N. Y.
LYDA ALEXANDER HIGGINS, Scientific Assistant, Dairy Division, U. S. Department of Agriculture.	B.S. 1910,	Brookhaven, Miss.
JAMES ALLEN HIGGS, JR., C.E. 1910. Assistant Engineer, Southern Railway.	B.E. 1906,	Norcross Ga.
JERE. EUSTIS HIGHSMITH, Farmer.	B.S. 1897,	Parkersburg, N. C.
DAVID RAYMOND HINKLE, P. H. Hanes Knitting Co.	B.E. 1911,	Winston-Salem, N. C.
DANIEL HARVEY HILL, JR., Associate Editor, Southern Textile Bulletin.	B.S. 1909,	Charlotte, N. C.
GUY FRANCIS HINSHAW, City Engineer of Winston.	B.E. 1907,	Winston-Salem, N. C.
GEORGE HERBERT HODGES, Engineer Mechanical Department, H. C. Frick Coke Co.	B.E. 1904,	Scottdale, Pa.
LABAN MILES HOFFMAN, JR., Cashier, The Bank of Dallas.	B.E. 1905,	Dallas, N. C.
CHARLES BOLLING HOLLADAY, The DuPont Co.	B.E. 1893,	Wilmington, Del.
WILLIAM NORMAN HOLT, Civil Engineer, with J. W. Wright, Jr.	B.E. 1907,	Evergreen, Ala.
BENJAMIN OLIVER HOOD, Structural Engineer, F. A. Burdett & Co., Consulting Engineers.	B.E. 1901,	New York, N. Y.
LOUIS LEE HOOD, Structural Steel Draftsman, Virginia Bridge and Iron Co.	B.E. 1910,	Roanoke, Va.
WAYNE ARINGTON HORNADAY, M.S. 1910. D.V.M. Kansas City Veterinary College, Veterinarian.	B.S. 1909,	Burlington, N. C.
JOHN HOWARD, Attorney at Law.	B.S. 1896,	Middlesboro, Ky.
JESSE MCRAE HOWARD, Overseer Dyeing, Gibson Manufacturing Co.	B.E. 1904,	Concord, N. C.

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*Not heard from this year.

Name.	*Degree.*	*Address.*	
Robert Irving Howard,	B.E. 1904 (Tex.),	Ajuno, Michoacan, Mexico.	Assistant Resident Engineer, National Railways of Mexico.
Branton Faison Huggins,	B.E. 1904,	Macon, Ga.	Salesman, Willingham Sash and Door Co.
Henry Allen Huggins,	B.S. 1900,	Wilmington, N. C.	Bookkeeper, George W. Huggins, Jeweler.
Christopher Miller Hughes,	B.E. 1895, B.S. 1899.	Richmond, Va.	Sales Manager, Montague Manufacturing Co.
Lloyd Rainey Hunt,	B.E. 1905,	Lexington, N. C.	Electrical Engineer, Yadkin River Power Co.
Hill McIver Hunter,	B.E. 1904,	Greensboro, N. C.	Purchasing Agent, Proximity Manufacturing Co. and White Oak Mills.
Malcolm Beall Hunter,	B.E. 1895,	Charlotte, N. C.	President Acme Plumbing and Heating Co.
John William Ivey,	B.E. 1909,	Dublin, Ga.	Central of Georgia Ry. Co.
William Colbert Jackson,	B.S. 1896,	Middlesex, N. C.	Farmer.
Eugene Colistus Johnson,	B.E. 1903,	Ingold, N. C.	Sawmilling and Farming.
William Fladger R. Johnson,	B.E. 1909,	Dillon, S. C.	Firm of Johnson & Johnson, Civil Engineers.
Albert Carl Jones,	B.Agr. 1907, D.V.S. Kansas City Veterinary College.	High Point, N. C.	Veterinarian, Meat and Milk Inspector.
Frederick John Jones,	B.E. 1909,	Hartsells, Ala.	Assistant Engineer, Louisville and Nashville R. R.
Garland Jones, Jr.,	B.S. 1900,	Raleigh, N. C.	
Robert Frank Jones,	B.E. 1910,	Wilmington, N. C.	Instrument Man, Atlantic Coast Line R. R.
William Whitmore Jones,	B.E. 1907,	Franklin, N. C.	Manager, Franklin Telephone and Electric Co.
Clyde Raymond Jordan,	B.E. 1910,	Currie, N. C.	Owner and Operator of Lumber Plant.
Martin Kellogg,	B.Agr. 1901,	Sunbury, N. C.	Farmer.
Clyde Bennett Kendall,	B.S. 1897,	Washington, D. C.	Assistant Topographer, U. S. Geological Survey.
Alpheus Rountree Kennedy,	B.S. 1898,	Quincy, Mass.	Ship Draftsman, Fore River Shipbuilding Co.

Name.	*Degree.*	*Address.*
James Matthew Kennedy,	B.E. 1903,	Raleigh, N. C.
	Architect.	
Sydney G. Kennedy,	B.S. 1897,	Sanford, Fla.
	Shop Foreman, Atlantic Coast Line R. R.	
Arthur Templeton Kenyon,	B.E. 1905,	Bradley Beach, N. J.
William Kerr,	B.S. 1904,	Blacksburg, Va.
	Assistant in Animal Husbandry, Va. Agricultural Experiment Station.	
Luther Hill Kirby,	B.E. 1910,	Manila, P. I.
	Bureau of Lands.	
William Franklin Kirkpatrick,	B.E. 1904,	Agr'l College, Miss.
	B.Agr. 1905. Poultry Husbandman, Miss. A. and M. College Experiment Station.	
Joseph Lawrence Knight,*	B.S. 1897,	Dewey, Fla.
	Pas Manufacturing Co., Naval Stores.	
Starr Neely Knox,*	B.E. 1905,	Charlotte, N. C.
	Assistant Engineer, Southern Railway Co.	
William Graham Knox,	B.S. 1906,	New York, N. Y.
	Assistant Chemical Engineer, Western Electric Co.	
James Herritage Koonce,	B.E. 1905,	Hartsville, S. C.
	With W. R. Bonsal & Co.	
Lafayette Franck Koonce,	B.Agr. 1907,	Raleigh, N. C.
	Veterinary Surgeon. D.V.S. Kansas City Veterinary College.	
Herbert William Kueffner,	B.E. 1908,	Tamaqua, Pa.
	Assistant Resident Engineer, Lehigh and New England R. R.	
Frederick Creecy Lamb,	B.S. 1898,	El Paso, Tex.
	Health Office (Chemist).	
Claude Milton Lambe,	B.E. 1908,	Rockingham, N. C.
	Civil Engineer, Yadkin River Power Co.	
Bennett Land, Jr.,	B.E. 1903,	Jacksonville, Fla.
	Division Engineer, Seaboard Air Line Ry.	
Joseph Thomas Land,	B.E. 1903,	Jacksonville, Fla.
	Assistant Engineer, Seaboard Air Line.	
Mark Clinton Lassiter,*	B.E. 1910.	Halifax, N. C.
	Halifax County Highway Engineer.	
James Edward Latham,	B.S. 1909,	Manila, P. I.
	Philippine Constabulary, Third Lieutenant.	
Charles Edward Latta,*	B.E. 1908,	Raleigh, N. C.
	Grocer.	
Eugene Talmage Lee,	B.E. 1910,	Dunn, N. C.

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*Not heard from this year.

Name. *Degree.* *Address.*

Jesse Julian Liles, B.E. 1901, Pittsburg, Pa.
Salesman, Power and Mining Department, General Electric Co.

Henry Marvin Lilly, B.E. 1905, Albemarle, N. C.
Civil Engineer.

Ernest Edwin Lincoln, B.E. 1904, Phœnixville, Pa.
Draftsman, The Phœnix Bridge Co.

David Lindsay, B.E. 1908, Spray, N. C.
Assistant Superintendent German-American Co.

John Henry Little,* B.E. 1908, Schenectady, N. Y.
Student Engineer, General Electric Co.

Ulphian Carr Loftin, B.S. 1910, Gainesville, Fla.
Assistant to Entomologist, Florida Agricultural Experiment Station

Ralph Long, B.S. 1909, Greensboro, N. C.
Salesman, P. Lorillard Co.

Louis Edgar Lougee,* B.S. 1907, Pittsburg, Pa.
Jones & Laughlin Steel Co.

Lewis Omer Lougee, B.E. 1901, Pittsburg, Pa.
Civil and Mining Engineer, with George S. Baton & Co.

Joe Poindexter Lovill, B.E. 1906, Perry, Wash.
Resident Engineer, Oregon-Washington Railroad and Navigation Co.

George Lafayette Lyerly, B.E. 1908, Hickory, N. C.
Manager and Partner, Shuford Hardware Co.

Lipscombe Goodwin Lykes,* B.E. 1905, Havana, Cuba.
Lykes Brothers.

Thompson Mayo Lykes,* B.E. 1906, Tampa, Fla.
Secretary, The Lykes Co.

George Green Lynch, Jr.,* B.E. 1905, Wilmington, N. C.
Draftsman, Atlantic Coast Line R. R.

Albert Sydney Lyon, B.S. 1899, Rocky Mount, N. C.
Superintendent, Rocky Mount Public Works.

Edmond Shaw Lytch,* B.E. 1903, Laurinburg, N. C.
Partner, Laurinburg Machine Co.

William McNeil Lytch, B.E. 1893, Laurinburg, N. C.
Partner, Laurinburg Machine Co.

Henry Kreiger McConnell, B.S. 1907, Louisville, Ky.
Assistant Chemist, Kentucky Tobacco Products Co.

Eugene Richard McCracken, B.E. 1911, Greensboro, N. C.
Pomona Mills (Inc.).

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*Not heard from this year.

Name.	*Degree.*	*Address.*
FRANK NEELY MCDOWELL, Farmer.	B.S. 1910,	Charlotte, N. C., R. 3.
MALCOLM ROLAND MCGIRT, Farmer.	B.Agr. 1905,	Fayetteville, N. C.
JOHN FAIRLY MCINTYRE,* Farmer.	B.E. 1904,	Laurinburg, N. C.
WALTER HOGE MCINTYRE, Associate Chemist and Agronomist, University of Tennessee.	B.S. 1905,	Knoxville, Tenn.
SAMUEL CHRISTOPHER MCKEOWN, Chief Engineer, Sumter Telephone Manufacturing Co.	B.E. 1895,	Sumter, S. C.
CHARLES MCKIMMON, JR., N. C. Agricultural Experiment Station.	B.S. 1911,	Raleigh, N. C.
JAMES MCKIMMON, General Bookkeeper, Raleigh Banking and Trust Co.	B.E. 1904,	Raleigh, N. C.
JOHN LUTHER MCKINNON, Farmer.	B.Agr. 1902,	Laurinburg, N. C.
JAMES WILLIAM MCKOY, Civil Engineer and Merchant.	B.E. 1893,	Black Mountain, N. C.
HORACE SMITH MCLENDON, Farm Superintendent, Einstein Brothers.	B.Agr. 1906,	Sanford, Fla., R. 2.
LENNOX POLK MCLENDON, Student, Law School of the University of N. C.	B.S. 1910,	Chapel Hill, N. C.
WALTER JONES MCLENDON, JR., President and General Manager, Capitola Manufacturing Co.	B.S. 1897,	Marshall, N. C.
OSCAR FRANKLIN MCNAIRY, Engineer Inspector, Seaboard Air Line Ry. Home Address, Greensboro, N. C.	B.E. 1907,	Great Falls, S. C.
SAMUEL HUXLEY MCNEELY, Commercial Engineer, General Electric Co.	B.E. 1909,	Pittsburg, Pa.
CHARLES HARDEN MCQUEEN, Inspector Bitulithic Pavements, Warren Brothers Co.	B.E. 1901,	Boston, Mass.
SAMUEL MACON MALLISON,*	B.E. 1909,	Washington, N. C.
CARROLL LAMB MANN, C.E. 1906. Civil Engineer and Assistant Professor, N. C. College of Agriculture and Mechanic Arts.	B.S. 1899,	West Raleigh, N. C.
LOUIS HENRY MANN, Dentist.	B.E. 1900,	Washington, N. C.
WILLIAM LEAKE MANNING, Rosemary Manufacturing Co.	B.E. 1910,	Rosemary, N. C.

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*Not heard from this year.

Name.	*Degree.*	*Address.*
Clarence Talmage Marsh, First Lieutenant, Coast Artillery Corps, U. S. A.	B.E. 1908,	Fort Wint, P. I.
William Roydan Marshall, Salesman, Westinghouse Machine Co. of East Pittsburg, Pa.	B.E. 1909,	New York.
Jacob Lee Martin, Engineering Department, Florida East Coast Ry Home Address, Graham, N. C	B.E. 1911,	Marathon, Fla.
Ralph Cecil Mason, Farmer.	B.S. 1909,	Edenton, N. C.
Arthur Ballard Massey, Instructor in Botany and Bacteriology in Clemson Agricultural College.	B.S. 1909,	Clemson College, S. C.
Walter Jerome Mathews,* Machine Broker.	B.E. 1893,	Goldsboro, N. C.
Raymond Maxwell,* Civil Engineer, Mattamuskeet Railway Co.	B.E. 1906,	Belhaven, N. C.
Melvin Solomon Mayes, Stem Power Co.	B.E. 1910,	Stem, N. C.
Frank Theophilus Meacham, M.S. 1894. Superintendent Experiment Station, U. S. Department of Agriculture.	B.S. 1893,	Statesville, N. C.
Eugene Franklin Meador, Machinist, Riverside Mills.	B.E. 1907.	Danville, Va.
Repton Hall Merritt, Secretary-Treasurer, Powell & Powell, Inc., Coal, Ice and Wood.	B.S. 1897,	Raleigh, N. C.
Robert Graham Mewborne,* Chemist, Kentucky Tobacco Product Co.	B.S. 1896,	Louisville, Ky.
Bennett Taylor Mial, McClintic-Marshall Construction Co. of Pittsburg, Pa.	B.E. 1907,	Connellsville, Pa.
Frank Curtis Michael, Erecting Engineer, Consolidated Engine Stop Co.	B.E. 1907,	New York, N. Y.
David John Middleton, Superintendent, Oak Grove Stock Farm for E. B. Craddock.	B.Agr. 1908,	Cluster Springs, Va.
Joseph Alfred Miller, Jr., Manager, Miller Supply Co.	B.E. 1904,	Brevard, N. C.
Walker Morehead Millner, Assistant Superintendent, Rhode Island Mills Co.	B.E. 1909,	Spray, N. C.
John Maple Mills, Raleigh and Southport Railway Co.	B.E. 1907,	Raleigh, N. C.
Benjamin Franklin Montague, Civil Engineer.	B.E. 1909,	Winston-Salem, N. C.

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*Not heard from this year.

Name.	*Degree.*	*Address.*	
HENRY STARBUCK MONTAGUE,*	B.S. 1907,	Agr'l College, Miss.	Assistant Chemist, Mississippi Agricultural College.
LEON DAVIS MOODY,	B.E. 1910,	Charleston, S. C.	Chief Engineer, Interstate Chemical Corporation.
EUGENE BOISE MOORE,*	B.E. 1910,	Norwood, Ohio.	Apprentice, Allis-Chalmers Co.
LACY MOORE,	B.E. 1906,	Washington, D. C.	Assistant Engineer, Southern Ry.
JAMES OSCAR MORGAN,	B.Agr. 1905,	College Station, Tex.	Professor of Agronomy, Texas A. and M. College.
ROBERT LEE MORGAN,	B.E. 1910,	Bailey, N. C.	
JESSE JOHN MORRIS,	B.E. 1903,	Weeksville, N. C.	Farmer.
WILLIAM FLAUD MORRIS,	B.E. 1909,	West Raleigh, N. C.	Instructor, N. C. College of Agriculture and Mechanic Arts.
JOSEPH GRAHAM MORRISON,	B.Agr. 1906,	Stanley, N. C.	Farming.
ROBERT HALL MORRISON,	B.E. 1900,	Charlotte, N. C.	Highland Park Manufacturing Co.
ROBERT LEE MORRISON,	B.E. 1911,	Stackhouse, N. C.	Civil Engineer, Laurel River Logging Co.
JOHN LIGHTFOOT MORSON,*	B.E. 1907,	Raleigh, N. C.	Civil Engineer, Seaboard Air Line Ry.
WILLIAM FIELD MORSON,*	B.E. 1904,	Raleigh, N. C.	Assistant Engineer, Ral. Char. and Sou.
LAURIE MOSELEY,	B.E. 1902,	Greensboro, N. C.	Southern Agent, Owego Bridge Co., also President Carolina Concrete Co.
VASSAR YOUNG MOSS,	B.E. 1902,	Canonsburg, Pa.	Draftsman, Fort Pitt Bridge Works.
HARRY YOEMANS MOTT,*	B.S. 1910,	Mooresville, N. C.	Farmer.
LINDSLEY ALEXANDER MURR,*	B.E. 1905,	Birmingham, Ala.	Assistant Engineer, Seaboard Air Line Ry.
GARLAND PERRY MYATT,	B.S. 1905,	Baltimore, Md.	Works Chemist, Thomsen Chemical Co.
O'KELLY W. MYERS,	B.S. 1899,	Brooklyn, N. Y.	Assistant Engineer, Board of Water Supply, City of New York.
JESSE CLARENCE MYRICK,	B.E. 1906,	Norfolk, Va.	Norfolk Navy Yard, Electrical Department.

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*Not heard from this year.

Name.	*Degree.*	*Address.*	
Leon Andrews Neal,	B.E. 1904,	Roanoke, Va.	Resident Engineer, Virginia Iron, Coal and Coke Co.
William McCormick Neale,	B.E. 1910,	Columbus, Ohio.	Draftsman, Elevator and Conveyor Department The Jeffrey Manufacturing Co.
Charles Arthur Nichols,	B.E. 1902,	Muskogee, Okla.	Manager, Third Street Grocery Co.
Charles Franklin Niven,	B.Agr. 1906,	Dahlonega, Ga.	Professor of Agriculture, North Georgia Agricultural College.
Lola Alexander Niven,	B.Agr. 1906,	Clemson College, S. C.	Assistant Professor of Horticulture, Clemson Agricultural College.
Lewis Milton Oden,	B.Agr. 1906,	Raleigh, N. C.	Proprietor, Raleigh Creamery, Merchant and Trucker.
Thomas Jefferson Ogburn, Jr.,	B.E. 1906,	Richmond, Va.	Everett Waddey Co.
Albert Hicks Oliver,	B.S. 1897,	Mount Olive, N. C.	Farmer.
Samuel Loftin Oliver,	B.E. 1909,	Fort Lauderdale, Fla.	Hardware Department, Stranahan & Co.
James Elwood Overton,	B.Agr. 1907,	Ahoskie, N. C.	Manager Ahoskie Ice and Cold Storage Co.
David Starr Owen,*	B.E. 1903,	Fayetteville, N. C.	Superintendent Standard Turpentine Co.
Edwin Bentley Owen,	B.S. 1898,	West Raleigh, N. C.	Registrar, N. C. College of Agriculture and Mechanic Arts.
John Alsey Park,	B.E. 1905,	Raleigh, N. C.	Business Manager, The Raleigh Times.
B. Moore Parker,	B.S. 1898,	West Raleigh, N. C.	Assistant Professor, N. C. College of Agriculture and Mechanic Arts.
Clyde Ester Parker,	B.S. 1906,	Raleigh, N. C.	Firm of Parker Bros. & Co., Cotton Brokers and Merchants.
Eugene Leroy Parker,	B.S. 1899,	Mt. Pleasant, Tenn.	Chemist and Manager, E. L. Parker & Co.
John Harvey Parker,*	B.E. 1903,	Jacksonville, Fla.	Secretary-Treasurer and Manager, Jacksonville Pepsi-Cola Co.
James Lafayette Parker,	B.E. 1902,	New York, N. Y.	Assistant Engineer, Herbert C. Keith, Consulting Engineer.
Julius Monroe Parker,	B.E. 1909,	Harlan, Ky.	Resident Engineer, Louisville and Nashville Railroad Co.

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*Not heard from this year.

Name.	*Degree.*	*Address.*
Thomas Franklin Parker,	B.Agr. 1907,	Raleigh, N. C.
M.S. 1908. Assistant in Corn Clubs, State and National Departments of Agriculture.		
Fred. Maynard Parks,*	B.E. 1907,	Wilkinsburg, Pa.
Engineering Department, Westinghouse Electric and Manufacturing Co.		
John Gilbert Paschal,	B.E. 1909,	Goldston, N. C.
Lumber Manufacturer.		
Arthur Lee Paschall,	B.Agr. 1907,	Lubbock, Tex.
Superintendent Agricultural Experiment Station, State of Texas.		
William Franklin Pate,	B.S. 1901,	West Raleigh, N. C.
Instructor in Chemistry, N. C. College of Agriculture and Mechanic Arts.		
Mann Cabe Patterson,	B.E. 1895,	Durham, N. C.
Firm of Patterson & Rouch, Machine Works.		
Robert Donnell Patterson,	B.S. 1894,	Chase City, Va.
M.S. 1898. President The First State Bank		
William Joel Patton,*	B.E. 1904,	Brevard, N. C.
Lumber Business.		
Charles Pearson,	B.E. 1894,	Dothan, Ala.
Member of Firm, Pearson Construction Co., General Contractors.		
Fred. Taylor Peden,	B.S. 1911,	Wilkesboro, N. C.
Farmer.		
John Taylor Peden, Jr.,	B.E. 1911,	Wilkinsburg, Pa.
Apprentice, Westinghouse Electric and Manufacturing Co.		
James Hicks Pierce,	B.S. 1905,	Warsaw, N. C.
J. H. Peirce Lumber Co.		
William Casper Pennington,	B.E. 1910,	Thomasville, N. C.
The Amazon Cotton Mills.		
Samuel Oscar Perkins,	B.S. 1906,	Burgaw, N. C.
Soil Scientist, N. C. Department of Agriculture.		
Eugene Gray Person,*	B.S. 1899,	Macon, Ga.
Train Dispatcher, Central of Georgia Ry.		
William Montgomery Person,	B.E. 1900,	Corey, Birm'h'm, Ala.
Night Superintendent, By-product Coke Plant, Tenn. Coal, Iron and Railroad Co.		
Frederick Colwell Phelps,*	B.E. 1904,	Monterey, Cal.
Second Lieutenant, 12th U. S. Infantry.		
William Ransome Phillips,	B.E. 1910,	Schenectady, N. Y.
Apprentice, General Electric Co.		
Peter Penick Pierce,	B.E. 1909,	Marathon, Fla.
Engineering Department, Florida East Coast Ry.		

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*Not heard from this year.

Name.	*Degree.*	*Address.*
Guy Pinner,	B.E. 1907,	New York.
Structural Engineer, H. C. Keith.		
Winslow Gerald Pitman,	B.E. 1907,	Lumberton, N. C.
City Lighting Plant.		
Paul Nathaniel Pittenger,	B.E. 1911,	Pittsburg, Pa.
Engineering Department, Pittsburg Gage and Supply Co.		
Benjamin Franklin Pittman,	B.E. 1908,	Morton Park, Ill.
Engineer, Western Electric Co.		
Lawrence Lyon Pittman,*	B.E. 1908,	Whitakers, N. C.
Civil Engineer.		
Paul Miller Pitts,*	B.E. 1909,	Lockhart, Ala.
Machinist, Jackson Lumber Co.		
Angelo Bettlena Piver,	B.E. 1906,	Phœnixville, Pa.
Structural Draftsman, Phœnix Bridge Co.		
William Crawford Piver,	B.S. 1906,	New York, N. Y.
Partner, Riches, Piver & Co., Chemical and Color Manufacturers, Hoboken, N. J.		
James Kemp Plummer,	B.S. 1907,	Raleigh, N. C.
Assistant Chemist, State Department of Agriculture.		
Pleasant H. Poindexter, Jr.,	B.Agr. 1905,	Hackberry, Okla.
Manager, C. E. Sharp Lumber Co.		
Ruble Isaac Poole,	B.E. 1908,	West Raleigh, N. C.
Instructor, N. C. College of Agriculture and Mechanic Arts.		
Edward Griffith Porter,	B.E. 1905,	Balboa, Canal Zone, Panama.
Transitman, Isthmian Canal Commission.		
Junius Edward Porter,	B.E. 1900,	Weldon, N. C.
General Manager and Treasurer, J. E. Porter & Co., Railroad Contractors.		
Harry Alexander Powell,*	B.E. 1908,	Melbourne, Fla.
Turpentine Business.		
James Alexander Powell,	B.E. 1908,	Pittsburg, Pa.
Engineer, Condensor Department, Westinghouse Machine Co.		
Joel Powers,	B.E. 1903,	Goldsboro, N. C.
Draftsman, Dewey Brothers.		
Thomas Milton Poyner,	B.E. 1908,	Oakton, S. C.
W. R. Bonsal & Co.		
James Bruce Price,	B.E. 1910,	Wilkinsburg, Pa.
Apprentice, Westinghouse Electric and Manufacturing Co.		
John Moir Price,	B.E. 1909,	South Bethlehem, Pa.
Sales Department, Bethlehem Steel Co.		

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*Not heard from this year.

Name.	*Degree.*	*Address.*
Hugh Williams Primrose,†	B.S. 1897, M.S. 1900.	Raleigh, N. C.
Abram Hinman Prince,	B.S. 1895,	San Augustine, Tex.
Special Agent, U. S. Department of Agriculture.		
Charles Marcellus Pritchett,*	M.E. 1895, C.E. 1896.	Manila, P. I.
Chief Division Engineer, Insular Government.		
Victor Vashti Privott,*	B.E. 1895,	Suffolk, Va.
Merchant.		
Josephus Plummer Quinerly,	B.S. 1911,	Washington, D. C.
Southern Railway, Land and Industrial Department.		
William Walter Rankin,*	B.E. 1904,	Fredericksburg, Va.
Professor of Mathematics, Fredericksburg College.		
Risden Patterson Reece,	B.E. 1904,	Winston-Salem, N. C.
Mechanical Engineer, American Portable Band-Saw Mill Co.		
Robert Richard Reinhardt,	B.S. 1909, D.V.M.	Lincolnton, N. C.
Kansas City Veterinary College.		
William Benedict Reinhardt,	B.E. 1902,	Dawson. Y. T., Canada.
Electrician, Northern Light, Power and Coal Co.		
Roger Francis Richardson,*	B.E. 1900,	Ensley, Ala.
Construction Engineer, Tennessee Coal, Iron and Railroad Co.		
William Richardson, Jr.,	B.E. 1904,	Birmingham, Ala.
Coal Mining Mechanical Engineer, Tennessee Coal, Iron and Railroad Co.		
Edward Hays Ricks,	B.E. 1903,	Roanoke Rapids, N. C.
Assistant Cashier, Bank of Roanoke Rapids.		
Alfred Pratte Riggs,*	B.E. 1909,	Knight's Key, Fla.
Florida East Coast Ry., West Summerland Camp.		
Durant Waite Robertson,*	B.E. 1906,	Washington, D. C.
Special Agent, Bureau of the Census.		
Joseph Henry Robertson,	B.E. 1909,	Salisbury, N. C.
Superintendent Light and Power and Railways, North Carolina Public Service Co.		
Jay Frederick Robinson,	B.E. 1910,	Florence, S. C.
Architectural Draftsman, W. J. Wilkins & Co., Architects.		
Gaston Wilder Rogers,	B.E. 1903,	Birmingham, Ala.
Physician and Surgeon.		
Zebbie George Rogers,	B.E. 1894,	Newark, Ohio.
Ferguson & Rogers, Contracting and Engineering.		
John Wesley Rollinson,	B.E. 1911,	Wilkinsburg, Pa.
Apprentice, Westinghouse Electric and Manufacturing Co.		

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*Not heard from this year.

†Deceased.

Name.	*Degree.*	*Address.*	
William Edwin Rose,*	B.E. 1900,	Newport News, Va.	Newport News Shipbuilding and Dry Dock Co.
Charles Burdette Ross,	B.E. 1903,	Charlotte, N. C.	Contractor.
Floyd De Ross,	B.E. 1900,	Lawton, Okla.	Owner and Manager, Lawton Coca-Cola Bottling Co.
Graeme Ross,	B.E. 1911,	Wilkinsburg, Pa.	Apprentice, Westinghouse Electric and Manufacturing Co.
George Romulus Ross.	B.S. 1911,	Jackson Springs, N. C.	Manager Farm for Roger A. Derby.
Carl Collins Sadler,	B.E. 1910,	Mulberry, Fla.	Civil Engineer, Prairie Pebble Phosphate Co.
James Olin Sadler,	B.E. 1909,	Jackson, Ky.	Bridge Inspector, Seaboard Air Line Ry., Portsmouth, Va.
Willis Hunter Sanders,	B.S. 1897,	Roanoke Rapids, N. C.	Superintendent Power Plants, Roanoke Navigation and Water Power Co.
John Hyer Saunders,*	B.E. 1894,	Rocky Mount, N. C.	Locomotive Engineer, Atlantic Coast Line R. R.
Ira Obed Schaub,	B.S. 1900,	West Raleigh, N. C.	Professor of Agricultural Extension, N. C. College of Agriculture and Mechanic Arts.
Leon Jacob Schwab,	B.E. 1907,	Savannah, Ga.	Engineer, U. S. Engineering Department.
Robert Walter Scott, Jr.,	B.Agr. 1905,	Rocky Mount, N. C.	Superintendent Edgecombe Test Farm, N. C. Department of Agriculture.
Earle Aloysius Seidenspinner,	B.S. 1910,	Manila, P. I.	Lieutenant, Philippine Constabulary.
Carl DeWitt Sellars,	B.E. 1893,	Greensboro, N. C.	Sales Department, Cone Export and Commission Co.
John Waldorf Sexton,	B.E. 1910,	Birmingham, Ala.	Field Engineer, Tennessee Coal, Iron and Railway Co.
Charles Edgar Seymore,†	B.S. 1893,	Raleigh, N. C.	
James Morgan Sherman,	B.S. 1911,	Madison, Wis.	Graduate Student, University of Wisconsin. Home Address, McLean, Va.
Frank Webber Sherwood,	B.S. 1909,	West Raleigh, N. C.	M.S. 1911. Instructor in Chemistry, N. C. College of Agriculture and Mechanic Arts.
Robert Arnold Shope,*	B.E. 1909,	Manila, P. I.	Lieutenant, Philippine Constabulary, Insular Government.

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*Not heard from this year.

†Deceased.

Name.	*Degree.*	*Address.*	
John Wade Shore,	B.S. 1900,	Boonville, N. C.	Cashier, Commercial and Savings Bank.
Ira Short,	B.E. 1911,	Wallace, N. C.	Machinist, Waccamaw Lumber Co.
John Houston Shuford,	B.S. 1903,	Charlotte, N. C.	Expert and Salesman, Berlin Aniline Works.
John Oscar Shuford,*	B.E. 1907,	Lincolnton, N. C.	Superintendent Electric Plant, Town of Lincolnton.
Orin Morrow Sigmon,	B.E. 1911,	Hickory, N. C.	Treasurer, Piedmont Wagon and Manufacturing Co.
George Gray Simpson,	B.E. 1909,	Charlotte, N. C.	Editor, Textile Manufacturer.
Frederick Erastus Sloan,	B.S. 1899,	Charlotte, N. C.	General Agent, The Security Life and Annuity Co.
William Neville Sloan,	B.E. 1909,	Blairville, Ga.	Field Assistant, U. S. Government Forest Service.
Andrew Thomas Smith,	B.S. 1899,	Woodbury, N. J.	Leading Draftsman, New York Shipbuilding Co. of Camden, N. J.
Edgar English Smith,*	B.E. 1908,	Greensboro, N. C.	U. S. Coast and Geodetic Survey.
Edwin Harrison Smith,	B.E. 1910,	Weldon, N. C.	Transitman, Atlantic Coast Line R. R.
Edward Oscar Smith,	B.E. 1901,	Newport News, Va.	Special Draftsman, Newport News Shipbuilding and Dry Dock Co.
James Lawrence Smith, Jr.,*	B.E. 1908,	Portsmouth, Va.	Assistant Engineer, Seaboard Air Line Ry.
Jonathan Rhodes Smith,*	B.E. 1905,	Pottsville, Pa.	Structural Steel Engineer, The Eastern Steel Co.
William Turner Smith,*	B.E. 1900,	Dublin, Ga.	Manager and Partner, Georgia Hydraulic Stone Co.
Thomas Jehu Smithwick,	B.S. 1897,	Mount Airy, N. C.	Consulting and Erecting Engineer.
Russell Elstner Snowden,	B.E. 1902,	Winston-Salem, N. C.	Civil Engineer and General Manager, Reynolds Farms.
Charlie Augustine Speas,	B.E. 1911,	Knight's Key, Fla.	Florida East Coast Ry.
John Francis Speight,†	B.E. 1910,	Whitakers, N. C.	
John Davidson Spinks,	B. E. 1905,	Wilmington, N. C.	Junior Engineer, U. S. Engineering Department.

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*Not heard from this year.

†Deceased.

Name.	*Degree.*	*Address.*
Jesse Page Spoon,	B.Agr. 1908,	Burlington, N. C.
M.S. 1909. Veterinarian. D.V.S. Kansas City Veterinary College.		
St. Julian Lachicotte Springs,	B.S. 1910,	Lake Waccamaw, N.C.
Farming for H. B. Short.		
Ervin Blackeney Stack,	B.E. 1905,	Monroe, N. C.
Member of Firm, J. E. Stack & Co.		
Charles Burt Stainback,*	B.E. 1910,	Wilkinsburg, Pa.
Apprentice, Westinghouse Electric and Manufacturing Co.		
Edward Roe Stamps,	B.E. 1903,	Macon, Ga.
Superintendent, F. S. Royster Guano Co.		
Harris Ingram Stanback,	B.E. 1910,	Newark, N. J.
With Engineering Department, Electric Co.'s Lamp Works at Harrison, N. J.		
Numa Reid Stansel,	B.S. 1898,	Schenectady, N. Y.
E.E. 1901. Commercial Engineer, General Electric Co.		
Thomas Barnes Stansel,	B.S. 1910,	West Raleigh, N. C.
Assistant Chemist, N. C. Agricultural Experiment Station.		
Alexis Preston Steele,	B.S. 1899,	Statesville, N. C.
Mechanical Engineer, Firm of J. C. Steele & Sons.		
Hugh Stuart Steele,	B.E. 1909,	Marathon, Fla.
Engineering Department, Florida East Coast Ry.		
Lucius Esek Steere, Jr.,*	B.E. 1911,	St. Louis, Mo.
Apprentice, Wagner Electric Manufacturing Co.		
Samuel Fatio Stephens,	B.E. 1909,	Raleigh, N. C.
Civil Engineer, Raleigh, Charlotte and Southern R. R.		
George Yates Stradley,	B.E. 1903,	Roanoke, Va.
Roanoke Bridge Co., Inc.		
John Snipes Stroud,*	B.E. 1908,	Concord, N. C.
Locke Cotton Mills.		
Walter Stephen Sturgill,	B.E. 1901,	Fort Riley, Kan.
Student Office, Mounted Service School. First Lieutenant Regiment of Field Artillery.		
William Clark Styron,	B.E. 1910,	Washington, N. C.
With William Bragaw & Co.		
Teisaku Shugishita,*	B.S. 1898,	Japan.
Beverly Nathaniel Sullivan,	B.S. 1901,	Winston-Salem, N. C.
Superintendent Winston-Salem Light and Fuel Co.		
Thomas Bryan Summerlin,	B.E. 1910,	Calypso, N. C.
Albritton & Summerlin, General Merchants.		
Henery Newbold Sumner,	B.E. 1909,	Fort Dade, Fla.
Lieutenant Coast Artillery Corps, U. S. Army.		

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*Not heard from this year.

Name.	*Degree.*	*Address.*	
Lloyd Hurst Swindell,	B.E. 1911,	Raleigh, N. C.	Microscopist, State Board of Health.
Vance Sykes,	B.E. 1907,	Wilmington, N. C.	Assistant Civil Engineer, Seaboard Air Line Ry.
George Frederick Syme,	B.S. 1898,	Raleigh, N. C.	C.E. 1907. Locating Engineer, Norfolk Southern Ry.
William Anderson Syme,†	B.S. 1899,	Raleigh, N. C.	M.S. 1903. Ph.D. Johns Hopkins University.
Freddie Jackson Talton,*	B.Agr. 1906,	Pikeville, N. C., R. 2.	Farmer.
Claude Straton Tate,	B.E. 1909,	Littleton, N. C.	Secretary, Tate Machinery and Supply Co.
James Clarence Temple,	B.S. 1904,	Experiment, Ga.	M.S. 1908. Bacteriologist, Georgia Experiment Station.
Malvern Hill Terrell,	B.E. 1909,	Atlanta, Ga.	Chief Engineer, U. S. Post Office and Courthouse.
Frank Martin Thompson,	B.E. 1910,	Wake Forest, N. C.	Athletic Coach.
Thomas Hampton Thompson,	B.E. 1910,	Thomasville, N. C.	Cashier, Southern Railway.
Buxton Williams Thorne,†	B.E. 1893,	Holly Springs, Miss.	
Thomas Whitnell Thorne,	B.E. 1911,	Pittsburg, Pa.	Salesman, National Tube Co.
Luther Russell Tillett,*	B.E. 1907,	Zamboanga, P. I.	Assistant Engineer, Moro Province.
Richard Henry Tillman.	B.E. 1906,	Baltimore, Md.	Industrial Engineer, Consolidated Gas, Electric Light and Power Co.
William Sidney Tomlinson,	B.E. 1906,	Columbia, S. C.	Civil Engineer, Shand Engineering Co.
James Edwin Toomer,	B.S. 1909,	Knoxville, Tenn.	Assistant Chemist, Tennessee Experiment Station.
Charles Edward Trotter,†	B.S. 1903,	Franklin, N. C.	M.D. Johns Hopkins University.
William Brooks Truitt,	B.E. 1907,	Greensboro, N. C.	Standard Boiler and Machine Co.
Fred. Goode Tucker,	B.E. 1911,	Madison, Wis.	Wisconsin State Highway Commission.
Isaac Norris Tull,	B.E. 1910,	Schenectady, N. Y.	Testing Department, General Electric Co.

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*Not heard from this year.

†Deceased.

Name.	*Degree.*	*Address.*	
Reid Tull,	B.E. 1906,	Mount Holly, N. C.	Resident Engineer, Piedmont and Northern Lines.
John Edwin Turlington,	B.Agr. 1907,	Athens, Ga.	Adjunct Professor, State College of Agriculture.
Joseph Platt Turner,	B.E. 1902,	Spray, N. C.	Vice President and Superintendent Lily Mills.
William Harrison Turner,	B.E. 1893,	Winston-Salem, N. C.	Wholesale Mill Feed, Hay and Grain.
Jackson Corpening Tuttle,	B.E. 1906,	Schenectady, N. Y.	Engineering Department, General Electric Co.
Robert Peele Uzzell,*	B.Agr. 1906,	Goldsboro, N. C.	Farmer.
Peter Valear, Jr.,	B.S. 1906,	Washington, D. C.	Assistant Chemist, Bureau Internal Revenue.
Lillian Lee Vaughan,	B.E. 1906,	West Raleigh, N. C.	M.E. 1909. M.E. 1911, Columbia University. Instructor in Mechanical Engineering, N. C. College of Agriculture and Mechanic Arts.
Solomon Alexander Vest,	B.S. 1900 (Chem.),	Mount Pleasant, Tenn.	B.Agr. 1901. Secretary and Treasurer, The Smith Laboratory.
Sylvester Murray Viele,	B.E. 1905,	Altoona, Pa.	Pennsylvania R. R. Co.
John Lawrence Von Glahn,	B.E. 1908,	Wilmington, N. C.	President, Clarendon Construction Co.
Edwin Thomas Wadsworth,	B.E. 1911,	Schenectady, N. Y.	Student Engineer, General Electric Co.
Roscoe Marvin Wagstaff,	B.E. 1900,	Norfolk, Va.	Marine Engine and Boiler Draftsman, U. S. Navy Department, Machinery Division.
Joseph Kendall Waitt,*	B.E. 1904,	Mulberry, Fla.	Chief Engineer, Prairie Pebble Phosphate Co.
Walter Jennings Walker,*	B.E. 1905,	Schenectady, N. Y.	General Electric Co. Home Address, Winston-Salem, N. C.
Steven Dockery Wall,†	B.E. 1905,	Rockingham, N. C.	
Charles Emmette Walton,	B.E. 1910,	Ampere, N. J.	Specification Department, Crocker-Wheeler Co.
Benjamin Franklin Walton,	B.S. 1894,	Raleigh, N. C., R. 1.	Farmer.
Edmund Farris Ward,	B.Agr. 1907,	Smithfield, N. C.	Abell & Ward, Lawyers.
Hugh Ware,	B.S. 1899,	Kings Mountain, N. C.	Farmer.

---

*Not heard from this year.

†Deceased.

Name.	*Degree.*	*Address.*
Charles Augustus Watson,†	B.S. 1901,	Raleigh, N. C.
James Hunter Watson,	B.S. 1911,	Raleigh, N. C.
Jordan Lea Watson,†	B.S. 1897, M.E. 1899.	Atlanta, Ga.
Walter Wellington Watt, Jr., Salesman, Saco-Pettee Co.	B.E. 1905,	Charlotte, N. C.
Lindsay Marade Weaver, Dacotah Cotton Mills, Inc.	B.E. 1907,	Lexington, N. C.
Marion Emerson Weeks, Draftsman, Navy Department, Bureau of Steam Engineering.	B.E. 1904,	Washington, D. C.
Howard Waldo Welles, Jr., Apprentice, Commercial Truck Company of America.	B.E. 1910,	Philadelphia, Pa.
John Jackson Wells, Civil Engineer.	B.E. 1907,	Rocky Mount, N. C.
Cleveland Douglas Welsh, Superintendent, Mayes Manufacturing Co.	B.E. 1902,	Mayesworth, N. C.
Albert Clinton Wharton, Jr., Farmer, Live Stock.	B.S. 1904,	Clemmons, N. C.
David Lyndon White,* Dairyman, Greensboro Creamery.	B.Agr. 1907,	Greensboro, N. C., R. 2
Jonathan Winborne White, Pennsylvania Agricultural Experiment Station.	B.S. 1903,	State College, Pa.
Royall Edward White, Engineer.	B.E. 1908,	Aulander, N. C.
Cecil Bernard Whitehurst, Salesman, Western Electric Co.	B.E. 1907,	Richmond, Va.
Joseph Slaughter Whitehurst, Civil Engineer, Norfolk Southern Ry.	B.E. 1909,	Elizabeth City, N. C.
Edwin Seymore Whiting,†	B.E. 1903,	Hamlet, N. C.
Gaither Hall Whiting,†	B.S. 1900,	Richmond, Va.
Levi Romulus Whitted, Superintendent of Construction, U. S. Public Buildings. With U. S. Treasury Department.	B.S. 1896, C.E. 1897.	Roswell, New Mexico.
Archie Carraway Wilkinson,* Assistant Engineer, Adams Engineering Co.	B.E. 1905,	Oklahoma City, Okla.
Charles Burgess Williams, Director N. C. Agricultural Experiment Station.	B.S. 1893, M.S. 1896.	West Raleigh, N. C.
Claude B. Williams, Physician.	B.S. 1899,	Elizabeth City, N. C.

---

*Not heard from this year.

†Deceased.

Name.	*Degree.*	*Address.*
Henry Lloyd Williams,	B.S. 1896,	Gates, N. C.
Superintendent Mills, Cofield Manufacturing Co.		
John C. Williams,	B.E. 1908,	Pensacola, Fla.
Transitman, Eastern Construction Co.		
James Harley Williams,	B.E. 1906,	Chattanooga, Tenn.
General Secretary, South Chattanooga Y. M. C. A.		
Arthur John Wilson,	B.S. 1907,	Knoxville, Ill.
Professor of Chemistry, Lombard College, Galesburg, Ill.		
John McCamy Wilson,*	B.E. 1894,	Clinton, S. C.
Mechanical and Electrical Engineer, Clinton Mills Co.		
John Spicer Wilson,	B.E. 1909,	Chicago, Ill.
Inspector and Engineer, Commonwealth Edison Co.		
Walter Booker Winfree,	B.S. 1911,	Wadesboro, N. C., R. 3.
Farmer.		
Edward Leigh Winslow,	B.E. 1910,	Puerto Barrios, Guatemala.
Civil Engineer, United Fruit Co. Home Address, Hertford, N. C.		
Lewis Taylor Winston,	B.Agr. 1906,	Big Stone Gap, Va.
Accountant, General Offices, Stonega Coke and Coal Co., Inc.		
Howard Wiswall, Jr.,	B.E. 1895,	Charleston, S. C.
Civil Engineer, Tuxbury Lumber Co.		
Paul Adams Witherspoon,*	B.E. 1909,	South Bethlehem, Pa.
Student at Lehigh University.		
Bradley Jewett Wooten,†	B.S. 1897,	Wilmington, N. C.
Benjamin Vaden Wright,	B.E. 1901,	Laurel, Miss.
Engineer of Maintenance of Way, N. O. M. and C. R. R.		
Marion Fuller Wyatt,	B.E. 1911,	Raleigh, N. C.
Member Job P. Wyatt & Sons Co.		
Robert Job Wyatt,	B.E. 1909,	Raleigh, N. C.
Member Job P. Wyatt & Sons Co.		
Charles Garrett Yarbrough,	B.E. 1895,	Los Angeles, Cal.
District Superintendent of Service Department, Westinghouse Electric and Manufacturing Co.		
Louis Thomas Yarbrough,	B.E. 1893,	Raleigh, N. C.
Register Clerk, Raleigh Post Office.		
Woodfin Bradsher Yarbrough,*	B.E. 1908,	McIver, N. C.
Farmer.		
Samuel Marvin Young,*	B.E. 1893,	Raleigh, N. C.
Traveling Salesman, Supplee Hardware Co. of Philadelphia.		
John Franklin Ziglar,	B.E. 1908,	Charlotte, N. C.
Assistant Engineer, Maintenance of Way Department, Southern Railway.		

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*Not heard from this year

†Deceased.

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